SAMPLING FOR PESTICIDE RESIDUES IN CALIFORNIA WELL WATER

2009 Update of the Well Inventory Database

For Sampling Results Reported From January 2008 through June 2009

Twenty-fourth Annual Report

Pursuant to the
Pesticide Contamination Prevention Act

California Environmental Protection Agency
DEPARTMENT OF PESTICIDE REGULATION

July, 2010

California Department of Pesticide Regulation

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California Environmental Protection Agency
California Department of Pesticide Regulation
Environmental Monitoring Branch
Ground Water Protection Program
1001 I Street, Sacramento, California 95814

EXECUTIVE SUMMARY

This report summarizes the reported results of wells sampled for pesticides from January 2008 through June 2009, (2) analyzes those results to determine the probable source of the residues, and (3) describes the actions taken to prevent migration of pesticides to ground water by the Department of Pesticide Regulation (DPR) for nonpoint agricultural sources of pesticides and by the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) for point sources of pesticides.

BACKGROUND

The purpose of the Pesticide Contamination Prevention Act of 1985, as amended (Food and Agricultural Code [FAC] sections 13141-13152), is to prevent further pesticide pollution of ground water aquifers which may be used for drinking water supplies in California. Among other provisions, this law requires:

- DPR to identify pesticides with the potential to pollute ground water (Groundwater Protection List [GWPL]) and monitor for those pesticides to determine if they have migrated to ground water.
- DPR to verify reported detections of pesticides in ground water and determine whether those detections were the result of agricultural use of the pesticide.
- State and local agencies to submit all results of well monitoring for pesticides to DPR.
- DPR to maintain a statewide data base of wells sampled for pesticides.
- DPR to post on its Web site[1] annually (1) the number of wells sampled for pesticides, (2) the number of wells with reported detections of pesticides, (3) the location of the wells, (4) the agencies responsible for drawing and analyzing the samples, (5) an analysis to determine the probable source of the detections, and (6) actions taken by the DPR's Director and SWRCB to prevent pesticides from migrating to groundwaters of the state.

This is the 24th annual report of this information.

RESULTS OF WELL SAMPLING FOR PESTICIDES AND SOURCES OF DETECTED RESIDUES

From January 2008 through June 2009, one or more of 24 pesticides and/or degradates were detected in 380 wells out of 3,691 wells tested. The positive wells were located in one or more of 23 counties out of 53 counties sampled. These results were reported by the California Department of Public Health (CDPH) and DPR (Table i). The 24 pesticide and degradates reported detected were 1,2-dichloropropane (1,2-D); 1,3-dichloropropene (1,3-D); atrazine; bromacil; carbon disulfide; dacthal; dacthal degradates; 1,2-dibromo-3-chloropropane (DBCP); deethyl-atrazine; deethyl-simazine or deisopropyl-atrazine; desmethylnorflurazon;

[1] <www.cdpr.ca.gov>

diamino-chlorotriazine; diquat dibromide; diuron; ethylene dibromide (EDB); lindane; methoxychlor; norflurazon; ortho-dichlorobenzene; prometon; simazine; thiobencarb; and xylene.

Table i. Summary, by agency, of well sampling data collected in 2008 and 2009.

Category	*Reporting Period and Agency*			
	2008/2009			*1985-2009*
	Total	*CDPH*	*CDPR*	*All Reporting Agencies*
Counties Sampled	53	53	7	58
Counties with Detections	23	23	2	50
Wells Sampled	3,691	3,590	102	22,924
Wells with Detections	380	315	65	5,102
Pesticides and/or Degradates Sampled	124	108	21	336
Pesticides and/or Degradates Detected	24	16	10	106

The status of the 19 pesticides and five degradates reported detected in this year's report is as follows:

- 8 of the 19 pesticide parent chemicals detected are no longer contained in products registered for use in California. These are DBCP; 1,2-D; carbon disulfide; EDB; lindane; methoxychlor, ortho-dichlorobenzene; and xylene.

- 1,3-D (Telone) was detected in two wells however, the results were not confirmed in subsequent retests of the wells by the well owners. The reports are assumed to be false positives so no further action will be taken by DPR.

- Dacthal (chlorthal-dimethyl) was detected in two wells. This was the first time that these wells have been sampled for dacthal. DPR will delay follow up monitoring until the results of follow up sampling are available. If the follow up samples are also positive, DPR may initiate monitoring.

- An unspecified degradation product of dacthal was detected in one well. Degradation products have been detected in the past and were determined not to pose a threat to public health at the levels found.

- DPR is waiting for the water systems to retest and provide results for the four wells (one from the 2008 and three from the 2009 report years) with reported methyl bromide detections and the three wells (one from the 2008 and two from the 2009 report years) with reported diquat dibromide detections. If follow up samples are positive, DPR may initiate monitoring.

- DPR is evaluating the validity of the reported detection of thiobencarb in Los Angeles County. Thiobencarb is an herbicide exclusively used in rice production and there is no record of thiobencarb use in this county.

- The remaining ten pesticides and degradates are currently registered for use in California and regulated by DPR as ground water contaminants in certain areas of the state. Table ii lists these ten chemicals, their range of concentrations, and California Maximum Contaminant Levels (MCLs). With the exception of one atrazine detection in Kern County, these detections occurred in areas of Fresno and Tulare counties that have been identified as groundwater protection areas.

Table ii. Reported detections of pesticides, or their degradates, currently regulated to protect ground water.

Pesticide Detected	*Number of Wells with Detections*	*Range of Concentrations (ppb)*	*Maximum Contaminant Level (ppb)*
Atrazine	3	0.055 - 0.46	1
Bromacil	21	0.052 - 4.49	None established (NE)
Deethyl-atrazine (degradate of atrazine)	14	0.053 - 1.33	NE
Deethyl-simazine or deisopropyl atrazine (degradate of atrazine or simazine)	60	0.055 - 0.537	NE
Desmethyl-norflurazon (degradate of norflurazon)	32	0.05 - 0.803	NE
Diamino-chlorotriazine (degradate of atrazine or simazine)	58	0.05 - 4.98	NE
Diuron	31	0.05 - 0.498	NE
Norflurazon	14	0.055 - 0.537	NE
Prometon	1	0.062 - 0.062	NE
Simazine	42	0.053 - 0.32	4

ACTIONS TAKEN TO PREVENT MIGRATION OF PESTICIDES TO GROUND WATER

Department of Pesticide Regulation

I. Protecting Vulnerable Areas from Pesticide Contamination

Regulation of Ground Water Contaminants

DPR continues to regulate the seven pesticides that have been found in ground water due to agricultural use–atrazine, simazine, bromacil, diuron, prometon, bentazon, and norflurazon–by

requiring permits and specified mitigation measures for use in sensitive areas (called ground water protection areas [GWPAs]). These GWPAs are classified as either leaching or runoff depending on the pathway of pesticide movement to ground water. There are 1673 sections of land (1.1 million acres) identified as leaching GWPAs, where the mitigation measures are designed to prevent overirrigation, 2015 sections of land (1.3 million acres) identified as runoff GWPAs, where the mitigation measures are designed to either prevent offsite movement of contaminated runoff or manage contaminated runoff so that it does not move to ground water. Fifty four sections of land (35,000 acres) were identified as partial leaching and partial runoff GWPAs.

In addition, DPR continues to enforce statewide regulations to protect ground water from the use of aldicarb and bentazon.

Assessing the Effectiveness of Mitigation Measures

To assess the effectiveness of mitigation measures to protect ground water, DPR established a well network in 1999 to monitor pesticide levels over time. A preliminary analysis indicates a decrease in concentrations of simazine, bromacil and diuron, which have been regulated since the early 1990's, and an increase in concentrations of norflurazon, which was not regulated until the late 1990's. This is consistent with a previous age-dating study that showed that the median time for a pesticide to move from the soil surface to well water was seven to nine years, indicating that there would be an expected lag time between adoption of regulations and changes in pesticide concentrations in ground water. A complete analysis of changes in the pesticide concentrations in these wells since 1999 will be published in a separate report.

DPR is also working to develop pesticide use modifications that protect ground water and are practical and effective. The most recent effort focused on the application of preemergent herbicides through a low volume micro-sprinkler irrigation system. DPR expects to complete the study report by late 2010.

II. Using Computer Simulated Modeling to Predict the Behavior of Pesticides in the Environment

Improving Contaminant Transport Modeling Tools

DPR uses the LEACHM pesticide fate and transport computer model to help determine the ground water contamination potential of pesticides. The pesticide terrestrial field dissipation rate is one of the important types of measured data used in this model. The current modeling scenario assumes a constant terrestrial field dissipation rate with soil depth, but studies indicate that slower dissipation rates dominate at lower soil layers. Thus, using a constant dissipation rate would underestimate the pesticide concentrations in ground water. In 2007 DPR initiated a study to provide estimates of depth-specific pesticide dissipation rates for two commonly used pesticides, simazine and diuron. Results from this study will be published in a separate report.

III. Collecting Environmental Fate Data, and Prioritizing and Monitoring Potential Pesticide Contaminants

Collecting and Maintaining Environmental Fate Data on Agricultural Pesticides

DPR updated the Pesticide Chemistry Database, which contains the physical and chemical properties of agricultural pesticides, such as terrestrial field dissipation rate, from environmental fate studies conducted by registrants. These data are used to help establish the GWPL to identify pesticides with the potential to pollute ground water and to run the LEACHM computer model to identify pesticides with the potential to contaminate ground water.

Prioritizing Pesticides Listed in 3CCR section 6800(b) (GWPL) For Monitoring

DPR is developing a method to rank the pesticides listed on the GWPL based on a comparison of their relative risks. This method includes the use of the LEACHM computer model to assess contamination potential. The ranking will allow DPR to direct limited resources to monitoring for the pesticides that pose the greatest risk to ground water. Based on the first iteration of this ranking, DPR selected iprodione, azoxystrobin, dichloran, and ethofumesate for analytical method development, and imidacloprid and S-metolachlor for the 2009 GWPL monitoring study.

Monitoring for Potential Pesticide Contaminants on the GWPL

In 2009, DPR initiated a GWPL monitoring survey for imidacloprid and imidacloprid degradates to determine if they have migrated to ground water. These pesticides were monitored in 34 wells in Monterey, San Benito, San Luis Obispo, Santa Barbara, and Ventura counties. The wells were also analyzed for atrazine, bromacil, diuron, hexazinone, norflurazon, prometon, simazine, tebuthiuron, and several degradates of these pesticides using a standard "triazine screen." No residues of imidacloprid, imidacloprid degradates, or pesticides in the triazine screen were detected. All sampling for these pesticides is complete and the final report is posted to DPR's Web site (<www.cdpr.ca.gov>).

Also in 2009, DPR initiated a GWPL monitoring survey for metolachlor and S-metolachlor (which cannot be distinguished analytically from each other), for the degradates metolachlor ethanesulfonic acid (ESA) and metolachlor oxanilic acid (OXA), and for the pesticides on the "triazine screen." These pesticides were monitored in 21 wells in Stanislaus and San Joaquin counties. DPR plans to sample for these pesticides in an additional 45 wells in Stanislaus, San Joaquin, Kings, Sacramento, Solano, and Yolo counties. The sampling and analysis will be completed in 2010.

IV. Assessing the Ground Water Contamination Potential of New Pesticides Proposed for Registration and Use in California

DPR reviews new pesticides and new uses of old pesticides to determine their potential for movement to ground water. Pesticides that meet initial screening criteria are further assessed using field dissipation data and physical-chemical characteristics in the LEACHM computer model. If it appears that a new pesticide is likely to be detected in ground water following normal application and irrigation practices, DPR will ask the registrant to collect additional field data to determine if the contamination potential can be mitigated. If so, DPR may recommend pesticide label amendments that would reduce the perceived threat to ground water before approving the pesticide for use in California. A perceived continued threat to California ground water would most likely result in a recommendation for denial of California registration.

Between July 1, 2008 and June 30, 2009 DPR evaluated nine pesticides initially categorized as potential ground water contaminants. Products containing three of these pesticides have a conditional registration limiting their statewide sales for a period of two years, pending submission of additional terrestrial field dissipation rate studies. These terrestrial field dissipation rates will be used in the LEACHM model to determine the ground water contamination potential of these pesticides. The studies have been designed to also help identify mitigation measures that are protective of ground water should the pesticides be determined to potentially threaten ground water under standard use practices. A product containing a fourth pesticide remains under conditional registration following the submission to DPR of additional field dissipation data that did not alleviate ground water contamination concerns. Further terrestrial field dissipation data derived under California climatic and agronomic conditions has been requested for this pesticide. A fifth pesticide has initially been denied a registration unless the label can be amended to protect California ground water. Products containing the remaining four pesticides were not considered to be a serious threat to ground water and full registration of these products was recommended by Ground Water Protection Program staff.

V. *Monitoring Ground Water Vulnerability Outside GWPAs*

DPR is currently conducting a study to assess the vulnerability of areas outside current GWPAs by monitoring for regulated and suspected pesticide contaminants. Further results for this study will be available for the 2010 version of this report.

State Water Resources Control Board

SWRCB staff participated in the following activities:

- Regularly attended meetings sponsored by DPR, including the interagency Pesticide Registration and Evaluation Committee and Pest Management Advisory Committee.

- Participated in ongoing consultations with DPR staff, University of California scientists, and pesticide manufacturers to design monitoring studies and Best Management Practices.

- Participated in discussions with U.S. Geological Survey (USGS) scientists on studies dealing with pesticides and water quality.

- Reviewed, on an ongoing basis, DPR Notices of "Materials Entering Evaluation" and advised DPR on potential water quality impacts of pesticide registration and use decisions.

- Reviewed and commented on DPR's proposed studies on pesticide and water quality pursuant to the Management Agency Agreement with DPR.

- In coordination with the USGS and Lawrence Livermore National Laboratory, the State Water Board is implementing the Groundwater Ambient Monitoring and Assessment Program (GAMA). The GAMA Program has sampled over 1,700 public water supply wells for various chemicals and contaminants, including pesticides and their degradates. The water quality results for the Southern and Central Sierra, East-Central San Joaquin Valley, South Sacramento Valley and Kern Basins–GAMA Study Unit are summarized in this report.

The State Water Board sampled over 90 domestic wells in San Diego County for various chemicals and contaminants, including pesticides, herbicides and their degradates. The results are also summarized in this report.

Regional Water Quality Control Boards

This report also summarizes, by county, the monitoring, assessment, cleanup, and other actions taken by the nine RWQCBs to address point sources of contamination for numerous pesticides.

The information presented in this report that pertains to the actions taken by SWRCB and the nine RWQCBs to prevent pesticides from migrating to ground water, is also available at: <http://www.waterboards.ca.gov/water_issues/programs/gama/docs/ab2021_fy0809.pdf>.

PREFACE

This report fulfills the requirements of AB 2701 (Chapter 644, Statutes of 2004), which amended the Pesticide Contamination Prevention Act (PCPA) to require DPR to post specified information on sampling for pesticide residues in California ground water to its Web site. This law replaced the previous requirement that DPR submit the sampling information in a written report to the Legislature, the SWRCB and the CDPH.

This report presents data reported to or produced by DPR from January 1, 2008, through June 30, 2009.

The PCPA requires the annual report to give the location of wells for which sampling results were reported. Privacy and security concerns and the large number of wells sampled prevent DPR from listing exact well locations. Instead, this report summarizes the locations by county. DPR can provide additional location information (county, township, range, and section) upon request. If you require this information, please contact DPR's Ground Water Protection Program at 916-324-4039.

ACKNOWLEDGEMENTS

The authors wish to thank the reviewers whose unique perspectives and experiences helped ensure the accuracy and readability of this report. We gratefully acknowledge the staff of DPR and cooperating federal, state, local, and private agencies for contributing to the database.

DISCLAIMER

As required by the PCPA, this report discusses the source of active ingredients, contained in registered pesticide products, which have been found in ground water. DPR provides this information to satisfy legal mandates and inform the public. Any discussion of commercially available pesticide products, or the way they are applied, does not constitute an actual or implied endorsement of these products by DPR.

ABBREVIATIONS

1,2-D	1,2-dichloropropane (propylene dichloride)
1, 3-D	1,3-dichloropropene (telone)
3CCR	Title 3 of the California Code of Regulations
ACET	deethyl-simazine or deisopropyl-atrazine
CAC	County Agricultural Commissioner
CDFA	California Department of Food and Agriculture
CDPH	California Department of Public Health
DACT	diaminochlorotriazine
DBCP	1,2-dibromo-3-chloropropane
DEA	deethyl-atrazine
DSMN	desmethyl norflurazon
DPR	Department of Pesticide Regulation
EDB	ethylene dibromide
ESA	ethanesulfonic acid
FAC	Food and Agriculture Code
GAMA	Groundwater Ambient Monitoring and Assessment
GWPA	ground water protection area
GWPL	Groundwater Protection List
MCL	maximum contamination limit
OEHHA	Office of Environmental Health Hazard Assessment
OXA	oxanilic acid
PCPA	Pesticide Contamination Prevention Act
PMZ	Pesticide Management Zone
ppb	parts per billion
PREC	Pesticide Registration and Evaluation Committee
RWQCB	Regional Water Quality Control Board
SNV	specific numerical values
SWRCB	State Water Resources Control Board
TPA	2,3,5,6-tetrachloroterephthalic acid
USGS	United States Geological Survey
U.S. EPA	United States Environmental Protection Agency

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INTRODUCTION

California has regulated pesticides for a century. Its citizens–through their Legislature–have established a comprehensive body of law to control every aspect of pesticide sales and use, and to assure that the state's pesticide regulators also have the tools to assess the impacts of that use. The first pesticide-related law was passed in this state in 1901, and since the 1960s, a whole body of modern, increasingly science-based pesticide law and regulation has come into being.

The California Department of Pesticide Regulation (DPR) protects human health and the environment by regulating pesticide sales and use and by fostering reduced-risk pest management. DPR's oversight begins with product evaluation and registration, and continues through statewide licensing of commercial applicators, dealers and consultants; environmental monitoring; and residue testing of fresh produce. About 350 DPR employees, including scientists from many disciplines, carry out California's pesticide regulatory program. In addition, approximately 280 full-time biologists dedicated to pesticide use enforcement work for County Agricultural Commissioners (CACs) who are responsible for local pesticide enforcement. DPR's annual budget is approximately $70 million of which about $19 million funds local pesticide enforcement activities in the counties.[2]

DPR began addressing pesticide contamination of ground water in the early 1980's after the discovery of contamination from the legal application of the fumigant dibromochloropropane (DBCP). Reports of additional pesticides in ground water resulted in the passage of the Pesticide Contamination Prevention Act (PCPA) in 1985, which added sections 13141-13152 to the Food and Agriculture Code (FAC). DPR's Ground Water Protection Program is based on general authority in the FAC to protect the environment from harmful pesticides, and specific authority in the PCPA that establishes a process to prevent further pesticide pollution of ground water used for drinking water supplies by agricultural pesticides. "Pollution" is defined in FAC section 13142 (j) as "the introduction into the groundwaters of the state of an active ingredient, other specified product, or degradation product of an active ingredient of a pesticide above a level, with an adequate margin of safety, that does not cause adverse health effects." The PCPA requires DPR to do the following:

- Require pesticide registrants to submit environmental fate data for agricultural use pesticides.[3]
- Use those data to identify pesticides with the potential to pollute ground water.
- Conduct well sampling to determine if potential leachers have moved to ground water.
- Determine whether a pesticide detected in ground water was due to legal (i.e., applications according to the label) agricultural use.
- Conduct a formal hearing to determine whether continued use of a pesticide found in ground water due to legal agricultural use should be allowed.

[2] From the Department of Finance, California Budget for DPR for Fiscal Year 2008-2009 <http://www.ebudget.ca.gov/StateAgencyBudgets/3890/3930/spr.html>.

[3] California's definition of "agricultural use" is broad, and includes not only pesticide use in production agriculture, but also on turf (e.g., golf courses, cemeteries) and along rights-of-way.

- If continued use is allowed, adopt reduced risk practices in regulation to prevent pollution of ground water.
- Establish a database of well sampling results that must be reported to DPR by all local, county, and State agencies monitoring for pesticides in ground water.
- Prepare an annual report that summarizes the reported monitoring results, analyzes those results to determine the probable source of the residues, and specifies the actions taken by DPR for nonpoint sources and by the SWRCB for point sources to prevent further contamination of ground water.

In addition to implementation of the PCPA, DPR's Ground Water Protection Program focuses on:

- Developing reduced-risk practices for pesticides identified as having moved through soil to ground water.
- Evaluating new pesticide use practices and irrigation methods that substantially reduce the movement of pesticides to ground water.
- Improving contaminant transport modeling tools that are essential in determining if new pesticides proposed for use in California could threaten ground water.
- Assuring property operator understanding of pesticide use restrictions through outreach and training programs.

If a pesticide is ever found in ground water due to nonagricultural use, such as residential uses in urban areas, and determined to present a hazard or potential adverse effect, it will be considered for review as part of DPR's pesticide registration reevaluation process.[4]

This report satisfies the requirements of FAC section 13152 (e) and describes, in detail, state agency ground water sampling results and the actions taken by DPR and the SWRCB to prevent pesticides from migrating to the ground waters of the state.

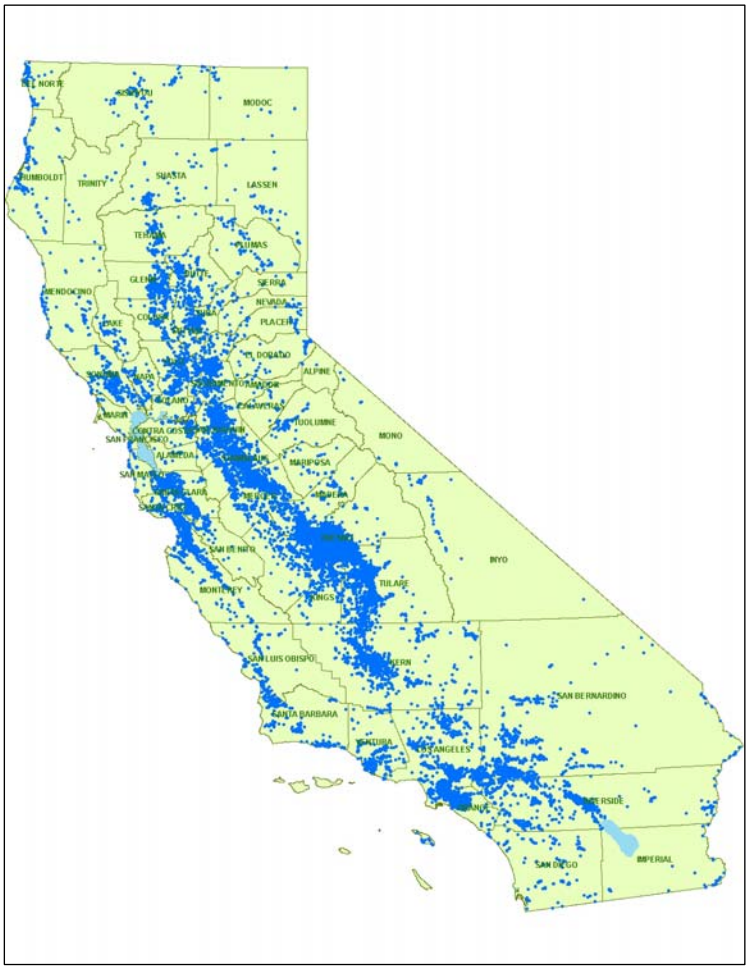
[4] Excerpted from "*Regulating Pesticides*: The California Story, a Guide to Pesticide Regulation in California (2001)" <*http://www.cdpr.ca.gov/dprabout.htm*>.

COLLECTING GROUND WATER SAMPLING DATA

WELL INVENTORY DATABASE

DPR maintains a database of ground water sampling results collected by DPR's Ground Water Protection Program and other public agencies[5]. DPR staff and stakeholders use these data to map the geographic distribution of current and historical pesticide detections, to identify areas vulnerable to contamination by agricultural pesticide use, and to design future ground water monitoring studies.

Figure 1. Wells in the DPR well inventory database.



DPR began collecting ground water monitoring data in the early 1980s. Currently, the Well Inventory Database contains over 1.8 million pesticide sample analyses submitted by 45 agencies (Appendix A). These data include almost 23,000 public and private wells that have been sampled for over 340 different pesticides and pesticide degradation products. Although there are a large number of contributors, the majority of the data comes from DPR (4 percent [%]) and the California Department of Public Health (CDPH) (93%). By 2011, DPR anticipates that the State Water Resources Control Board's (SWRCB's) Groundwater Ambient Monitoring and Assessment (GAMA) Program will become a significant data contributor.

The Well Inventory Database includes the following information:

- State well number
- Well location, type and county
- Sampling agency
- Analyzing laboratory and sample date and type (e.g., initial or confirmation)
- Chemical analyzed and individual sample concentration, in parts per billion (ppb)

[5] FAC section 13152 c requires public agencies to submit the results of ground water sampling for pesticides to DPR. Although they are not required to submit data, DPR accepts ground water sampling data from federal agencies and private organizations when offered.

Data included in the 2009 report are based on the year the data were submitted to DPR, not the date the samples were collected. In this report, data for DPR represent samples collected from July 2008 through June 2009. The CDPH samples were collected from January through December 2008.

PRINCIPAL REPORTING AGENCIES

The regulatory responsibilities unique to each reporting agency determine sampling frequency, location, and well type. These differences also greatly influence the chemicals monitored and the sensitivity of the analytical methods used. Therefore, although the ground water monitoring data maintained by DPR is wide-ranging - thousands of wells sampled for hundreds of pesticides - it does not provide a systematic assessment of ground water quality throughout California.

Department of Pesticide Regulation

DPR protects human health and the environment by regulating pesticide sales and use and by fostering reduced-risk pest management. DPR's strict oversight begins with product evaluation and registration, and continues through statewide licensing of commercial applicators, agricultural pesticide dealers and advisers, and monitoring air, water, soil, and fresh produce for pesticide residues. Before a pesticide may be used in California, the registrant must submit data on the product's toxicology and chemistry; its environmental fate; its effectiveness against targeted pests; its hazards to nontarget organisms, fish and wildlife; and the degree of worker exposure expected under normal use conditions. DPR evaluates these data to minimize the risk of the pesticide to human health and the environment. If the data indicate potential, uncontrollable adverse environmental or human health effects, DPR's Director may deny the registration request or cancel current product registrations.

DPR uses monitoring data to better understand the behavior of pesticides in soil, air, and water and assess the impact of pesticide use on the environment. To ensure consistent and reliable sampling results, DPR funds the Department of Food and Agriculture's Center for Analytical Chemistry to develop analytical methods and conduct sample analyses. Following reports of pesticide detections from other agencies, DPR conducts additional sampling to confirm the detections, characterize the nature and extent of the potential contamination, and determine how to prevent or mitigate the off-site movement of pesticides.

DPR's Ground Water Protection Program focuses on early detection of potential pesticide contaminants and on developing reduced-risk practices for pesticides that have been found in ground water due to legal agricultural use. Pesticides found in ground water or soil due to nonagricultural use, such as residential uses in urban areas, and that have been determined to present a hazard or potential adverse effect, will be reviewed as part of DPR's formal pesticide registration reevaluation process.

For more information about pesticide regulation in California, please visit DPR's Web site at: <www.cdpr.ca.gov>.

California Department of Public Health

CDPH is responsible for the enforcement of the federal and California Safe Drinking Water Acts and the regulatory oversight of ~7, 500 public water systems to assure the delivery of safe drinking water to all Californians. In this capacity, CDPH staffs perform field inspections, issue operating permits, review plans and specifications for new facilities, take enforcement actions for non-compliance with laws and regulations, review water quality monitoring results, and support and promote water system security. In addition, CDPH staff are involved in funding infrastructure improvements, conducting source water assessments, evaluating projects utilizing recycled treated wastewater, and promoting and assisting public water systems in drought preparation and water conservation.

CDPH establishes health protective drinking water standards that must be met by public water systems. These standards, known as maximum contaminant levels (MCL), take into account not only chemicals' health risks but also factors such as detection and treatment capabilities, as well as treatment costs. CDPH establishes a contaminant's MCL at a level as close to its public health goal (PHG) as is technically and economically feasible, placing primary emphasis on the protection of public health (see the MCL process). CDPH uses health-based advisory levels called notification levels for certain chemicals without MCLs. Along with the MCL, a regulated chemical also has a detection limit for purposes of reporting the level at which CDPH is confident about quantification being reported.

Under CDPH oversight, public water systems monitor drinking water for regulated contaminants. These systems may also monitor for emerging contaminants and chemicals identified through the U.S. Environmental Protection Agency's (EPA's) Unregulated Contaminant Monitoring Program. As required by law, they assure compliance with mandated drinking water standards and provide annual monitoring reports to their customers. CDPH compiles and evaluates drinking water quality data collected by public water systems and provides results for pesticide monitoring to DPR for inclusion in this report.

For more information about drinking water safety and regulation in California, go to the CDPH Web site at <www.cdph.ca.gov>, click on the "Programs" tab at the top of the page and follow the links to the Division of Drinking Water and Environmental Management Home Page.

State Water Resources Control Board–Groundwater Ambient Monitoring and Assessment Program

The SWRCB expanded the GAMA Program following implementation of the Groundwater Quality Monitoring Act of 2001 which added Part 2.76 (commencing with Section 10780) to Division 6 of the Water Code. This law resulted in a publicly accepted plan to monitor and assess basins that account for over 90% of groundwater use. The plan identified these "priority basins" based on groundwater used statewide. The main objectives of the GAMA Program are to improve statewide ambient groundwater quality monitoring and assessment and to increase the availability of information about groundwater quality to the public. The GAMA Program has three current projects:

- The GAMA Priority Basin Project monitors for dozens of chemicals at very low detection limits, including emerging contaminants. Monitoring and assessments for priority basins are to be completed every ten years, with trend monitoring every three years. The SWRCB is collaborating with the U.S. Geological Survey (technical project lead) and Lawrence Livermore National Laboratory (LLNL) to implement the GAMA Priority Basin Project.

- The GAMA Program also assesses the quality of domestic well water through its Domestic Well Project. The GAMA Domestic Well Project has sampled in several county-focus areas in coordination with local environmental health departments, and provides an education component to help domestic well users to better understand water quality issues.

- The GAMA Special Studies Project partners with LLNL to conduct several groundwater studies including nitrate, wastewater, and groundwater recharge. LLNL scientists use the Tritium-Helium age dating technique, isotopic composition of water and nitrate molecules to determine source(s), and presence of noble gases to determine recharge source and condition, as well as sophisticated computer modeling techniques. UC Davis has also contributed to GAMA Special Studies.

DPR and the SWRCB's GAMA Program are working collaboratively to improve our ability to share groundwater-monitoring data collected by our respective programs. DPR received Priority Basin Project data from SWRCB in 2008; however, the well locations were reported with lat/long coordinates, not the township, range and section designations that are used by the Department of Water Resources to formally establish state well numbers. DPR plans to wait until GAMA submits the complete data set of this round of pesticide well monitoring results before converting the lat/long locations to township, range and section designations, and expects to report the results in the 2010 Well Inventory Report.

For more information about the SWRCB's GAMA Program, go to <www.swrcb.ca.gov> and select "More" from the links at the top of the page, then follow the "Groundwater" link to the GAMA Program Home Page.

SAMPLING GROUND WATER FOR PESTICIDES

This section describes DPR's Ground Water Protection Program and our response to detections reported by other state and local agencies. It also summarizes ground water sampling results submitted by CDPH and produced through DPR's regulatory monitoring activities.

GROUND WATER MONITORING REQUIREMENTS

The PCPA requires DPR to take steps to prevent or mitigate ground water pollution from the agricultural use of pesticides. DPR must base these regulatory actions on scientifically defensible monitoring surveys and reliable analytical results.

Per the PCPA, DPR monitors ground water for pesticides in areas where applicators use large amounts of persistent and mobile agricultural pesticides that are intentionally applied to soil or where typical pesticide use practices or product chemistries of these pesticides create an opportunity for potential pollution. The law specifies that the sampling results must be obtained from an approved analytical method that provides unequivocal identification of a pesticide, such as mass spectroscopy, or from verification, within 30 days, by a second analytical method or a second analytical laboratory also approved by DPR. If an approved laboratory confirms the presence of a pesticide in a ground water sample using an approved analytical method, DPR must determine whether the agricultural use of that pesticide caused the detection. State law authorizes DPR to regulate the sales and use of legally registered pesticides that pollute or threaten to pollute ground water. State law does not authorize DPR to regulate pesticide residues found in ground water due to manufacturing processes, accidental spills or releases, or illegal disposal or to address the detection of unregistered or banned pesticides in ground water. DPR refers these types of pesticide detections to the SWRCB, the state lead agency for water quality protection, for further investigation.

RESPONDING TO REPORTED PESTICIDE DETECTIONS

DPR uses a wide range of information, including the data reported by other public agencies, to identify and monitor areas that may be vulnerable to pesticide contamination. With few exceptions, DPR samples all wells with reported pesticide detections regardless of the analytical methods or laboratories used by the reporting agencies. We do this because the PCPA requires DPR to base its regulatory actions on sampling results obtained from DPR-approved analytical methods and laboratories.[6] DPR rarely limits sampling to the reported pesticide: we test wells with suspected pesticide contamination for a broad range of known and suspected pesticide contaminants using sensitive analytical methods that allow us to detect amounts as low as 0.05 ppb.

Before sampling wells with reported detections, DPR establishes the accuracy of the reports by reviewing them with the reporting agencies, the well owners and, occasionally, the analytical laboratories. DPR also reviews analytical laboratory procedures following reported pesticide detections that appear unlikely due to unusual environmental fate characteristics, such as high

[6] The California Department of Food and Agriculture's Center for Analytical Chemistry provides approved analytical services for DPR's environmental monitoring programs.

volatility or irreversible binding to soil particles, or a lack of documented use and/or legal use sites near the well. Evaluating the laboratory's analytical methods and the quality assurance and quality control data allows DPR to assess the reliability of the reported sample results. If we determine that the data were reported in error or may be invalid due to unacceptable analytical variability, DPR will not sample the well but will closely follow future sampling results.

Although DPR is mandated to monitor ground water for the presence of pesticides and it is our policy to sample wells with reported pesticide detections, DPR does not have the legal authority to require well owners to participate. Since participation is voluntary, DPR works cooperatively with the well owners and, in some cases, the reporting agencies to obtain samples from the wells with valid pesticide detections. Occasionally, we are unable to sample the original well because it was destroyed or the well owner declined our request to sample the well. In this case, DPR will attempt to sample other nearby wells especially if the pesticide was, or could have been, used in the area.

Typically, DPR will not conduct additional sampling if:

- DPR and the County Agricultural Commissioners already regulate the detected pesticide as a ground water contaminant and require pesticide users in the area where the pesticide was detected to follow mandated application practices designed to protect ground water.

- The detected pesticide is no longer registered for sales and use in California.[7]

- The analytical laboratory reported finding pesticide residues at levels less than 80% of our analytical reporting limit.

- The reporting agency performed additional tests on the well and could not confirm the original detection.

- DPR is unable to develop an adequate analytical method.

[7] For example, to satisfy state and federal drinking water standards, CDPH tests for and continues to find pesticides that were banned many years ago but still pose a hazard to the people who may drink the water. Since these pesticides are no longer registered or allowed to be used in California, DPR has no regulatory authority to mitigate these past problems.

GROUND WATER SAMPLING RESULTS

Overview

The ground water monitoring data included in this report were collected by CDPH in 2008 and by DPR from July 2008 through June 2009. No other agency reported to DPR during this time period. In total, over 3,600 wells in 53 counties were sampled for one or more of 124 pesticides or pesticide degradation products. The reporting agencies sampled 3,585 public water system wells, 94 private drinking water wells, 10 irrigation wells and two industrial supply wells. CDPH and DPR detected 24 pesticides or pesticide degradation products in 380 drinking water wells (Tables 1 and 2 and Appendix B). Information about the California registration status of the detected pesticides and pesticide degradation products are presented in Table 2.

Table 1. Summary, by agency, of well sampling data reported in 2008 and 2009.

Category	*Reporting Period and Agency*			
	2008/2009			*1985-2009*
	Total	*CDPH*	*CDPR*	*All Reporting Agencies*[8]
Counties Sampled	53	53	7	58
Counties with Detections	23	23	2	50
Wells Sampled[9]	3,691	3,590	102	22,924
Wells with Detections	380	315	65	5,102
Pesticides and/or Degradates Sampled[10]	124	108	21	336
Pesticides and/or Degradates Detected	24	16	10	106

[8] See Appendix A for a list of the local, state and federal agencies that have contributed well monitoring data to DPR since the early 1980's.

[9] For the purpose of this report, the table columns "Wells Sampled" and "Wells with Detections" present the total number of individual wells sampled or found to contain pesticide residues regardless of the number of sampling events or detections that occurred during the reporting period.

[10] For the purpose of this report, the table columns "Pesticides Sampled" and "Pesticides Detected" present the total number of individual pesticides or pesticide degradation products sampled or found in ground water regardless of the number of sampling events or detections that occurred during the reporting period.

Table 2. California registration status of the pesticides and pesticide degradation products detected by CDPH in 2008 and DPR from July 2008 through June 2009.

Chemical	*Currently registered pesticide*	*Currently registered pesticide/ degradation product*	*Cancelled, suspended or banned pesticide*
1,3-D	X		
Atrazine	X		
Bromacil	X		
Dacthal	X		
Diquat dibromide	X		
Diuron	X		
Methyl bromide	X		
Norflurazon	X		
Prometon	X		
Simazine	X		
Thiobencarb	X		
ACET		X	
DACT		X	
Dacthal degradates		X	
DEA		X	
DSMN		X	
1,2-D			X
Carbon disulfide			X
DBCP			X
EDB			X
Lindane			X
Methoxychlor			X
Ortho-dichlorobenzene			X
Xylene			X

California Department of Public Health Sampling Results

CDPH Sampling Results Summarized by Pesticide

In 2008, CDPH reported that California's drinking water purveyors sampled for 108 pesticides and pesticide degradation products in over 3,500 drinking water supply wells. Sixteen pesticides and degradation products were detected in 315 wells (Table. 1 and Appendix B). Of the pesticides detected, the following are contained in or could have originated from products currently registered for use as pesticides in California: 1,3-D, atrazine, dacthal, dacthal degradation products, diquat dibromide, methyl bromide, simazine, and thiobencarb (Tables 2 and 3).

DPR will defer follow-up sampling for methyl bromide and diquat dibromide until the results of additional sampling by the water systems becomes available. The status of follow-up to the current and previous years detections are as follows:

- In the 2008 report year, CDPH reported five wells with methyl bromide residues and two wells with diquat dibromide detections. Four of five water systems with methyl bromide detections have retested their wells and no methyl bromide was detected. One of the two water systems with diquat dibromide detections has retested their well and detected no residues of diquat dibromide.

- In the 2009 report year, CDPH reported four wells with methyl bromide residues and two wells with diquat dibromide detections. One of four water systems with reported methyl bromide detections retested their well and no methyl bromide was detected. With respect to diquat dibromide, neither system had retested their well prior to December 31, 2008.

- In 2009, DPR is currently waiting for the water systems to retest and provide results for the four wells (one from the 2008 and three from the 2009 report years) with reported methyl bromide detections and the three wells (one from the 2008 and two from the 2009 report years) with reported diquat dibromide detections.

1,2-D, carbon disulfide, DBCP, EDB, lindane, methoxychlor, ortho-dichlorobenzene and xylene were used as pesticides many years ago but are now prohibited in California due to concerns for their effects on human health (Table 2). 1,2-D, DBCP, and EDB contaminated ground water as a result of agricultural applications that occurred prior to 1982. These chemicals are persistent in ground water and remain as a ground water problem for many communities in California.

A number of detections of DBCP and EDB exceeded their respective MCLs established by CDPH. 1,2-D exceeded the PHG, an advisory level set by the Office of Environmental Health Hazard Assessment (OEHHA) (Table 3 and Appendices B and C).

Table 3. Pesticides detected in public supply wells by CDPH in 2008 and DPR's response to these detections.

Pesticide	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
1,2-D (1,2-dichloro propane)	9[11]	0.22 – 3.8	1,2-D was used as an agricultural soil fumigant until the late 1970s when use was discontinued due to human health concerns. It is currently used in industrial manufacturing. CDPH regulates 1,2-D as a drinking water contaminant.[12] None of the 1,2-D detections exceeded the MCL (5 ppb), however; the PHG (0.5 ppb) for 1, 2-D was exceeded in 8 of 9 wells. DPR does not respond to reported detections of 1,2-D because it is no longer regulated as a pesticide.
1,3-D (1,3-dichloro propene) (telone)	2	0.64 – 0.66	1,3-D is registered as an agricultural pre-plant soil fumigant. CDPH regulates 1,3-D as a drinking water contaminant. 1,3-D was detected in amounts that exceeded the MCL (0.5 ppb) in both wells. Both water systems with reported detections resampled their wells within a month of the original sampling and detected no 1,3-D residues in the retests. DPR plans no further action based on these reports.
Atrazine	1	0.46	Atrazine is registered as an agricultural herbicide and its use is regulated in areas of the state that DPR has identified as vulnerable to ground water contamination. CDPH regulates atrazine as a drinking water contaminant. Atrazine was detected in amounts less than the MCL (1 ppb). This detection was located in an area that is not regulated for atrazine contamination. If the water system detects atrazine in a subsequent sample, DPR will conduct follow up monitoring at the well and in the surrounding adjacent area.

[11] Some of the wells listed in this table were sampled more than once during the reporting period. For the purposes of this table, a well where pesticides were detected is only counted once regardless of the number of samples taken. However, the range in amounts detected reflects all positive samples take during the reporting period.

[12] See Appendix B for more information about mandatory water quality standards established by CDPH and suggested limits established by the U. S. EPA.

Pesticide	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Carbon disulfide	1	1.5	Carbon disulfide was previously used as a fumigant/rodenticide. No pesticides containing carbon disulfide have been registered in California since 1987. There is no MCL or PHG for carbon disulfide however, CDPH set a Notification Limit of 160 ppb and some water systems monitor for it as part of the U.S. EPA's Unregulated Contaminant Monitoring Program.. DPR does not respond to reported detections of carbon disulfide because it is no longer regulated as a pesticide.
Dacthal (Chlorthal-dimethyl / DCPA)	2	0.1 – 0.14	Dacthal is registered as an agricultural herbicide. Although there is no MCL or PHG for dacthal, some water systems monitor for it as part of the U.S. EPA's Unregulated Contaminant Monitoring Program. Since this was the first time that these wells have been sampled for dacthal, DPR will delay action until the results of follow up sampling are available. If the follow up samples are also positive, DPR may initiate monitoring.
Dacthal degradates (Chlorthal-dimethyl acid degradation products)	1	18.3	Chlorthal-dimethyl acid is a degradation product of dacthal, a registered agricultural herbicide. Although there is no MCL or PHG for this pesticide degradation product, some water systems monitor for it under the U.S. EPA's Unregulated Contaminant Monitoring Program. DPR responds to detections of pesticide degradation products when the detected amount exceeds a level determined to pose a threat to public health. Degradation products have been detected in the past and were determined not to pose a threat to public health at the levels found.

Pesticide	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
DBCP (1,2-dibromo-3-chloropropane)	272	0.01 – 2.2	DBCP, an agricultural fumigant, was banned in the U.S. by the early 1980s due to human toxicity concerns and widespread ground water detections. CDPH regulates DBCP as a drinking water contaminant. DBCP was detected in amounts that exceeded the MCL (0.2 ppb) in 79 wells. The PHG (0.0017 ppb) for DBCP was exceeded in all 272 wells. DPR does not respond to reported detections of DBCP because it is no longer regulated as a pesticide.
Diquat dibromide	2	1.3	Diquat dibromide is registered as an agricultural herbicide. CDPH regulates diquat dibromide as a drinking water contaminant. None of the diquat dibromide detections exceeded the MCL of 20 ppb or the PHG of 15 ppb. The two water systems did not resample their wells for diquat dibromide during the 2008 reporting period. A third water system from the 2007 reporting year indicated that they would conduct required monitoring in 2010. All three water systems sampled for diquat dibromide prior to 2008 period but never detected it in these wells. Due to the sampling history of these wells, the environmental fate of diquat dibromide (binds permanently to soil) and lack of reported use near the wells, DPR will delay monitoring until the results from follow up sampling are available.
EDB (Ethylene dibromide)	8	0.02 – 0.42	EDB, an agricultural fumigant, was banned in the United States by the early 1980s. CDPH regulates EDB as a drinking water contaminant. EDB was detected in amounts that exceeded the MCL (0.05 ppb) in six wells. The PHG (0.01 ppb) for EDB was exceeded in all 8 wells. DPR does not respond to reported detections of EDB because it is no longer regulated as a pesticide.

Pesticide	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Lindane (gamma-BHC)	1	0.22	Lindane, an insecticide, was previously registered for use on crops, crop seed, livestock, home gardens and pets. In California, most product registrations were cancelled by the late 1990s with the last seed treatment registration cancelled in 2005. Lindane is still used to control lice and scabies on humans but is scheduled for full phase out by 2014. CDPH regulates lindane as a drinking water contaminant. Lindane was detected in amounts that exceeded the MCL (0.2 ppb). DPR does not respond to reported detections of lindane because it is no longer registered for agricultural uses.
Methoxychlor	2	0.32 – 0.55	Methoxychlor, an insecticide, was previously registered for use on crops, crop seeds, livestock, home gardens and pets. Due to environmental and human health concerns and a failure on the part of the registrant to satisfy federal data requirements, all product registrations were cancelled by the mid-1990s in California and by 2000 nationally. CDPH regulates methoxychlor as a drinking water contaminant. None of the amounts detected exceeded the MCL (30 ppb). DPR does not respond to reported detections of methoxychlor because it is no longer regulated as a pesticide.

Pesticide	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Methyl bromide (bromomethane)	4	1.9 – 9.3	Methyl bromide is registered for use as an agricultural fumigant. Although there is no MCL or PHG for methyl bromide, some water systems monitor for it as part of the U.S. EPA's Unregulated Contaminant Monitoring Program. During the reporting period, four water systems reported methyl bromide detections. One water system sampled their well during 2008 and detected no residues in the follow up samples. All four water systems have sampled for methyl bromide prior to the 2008 reporting period but never detected it in these wells. DPR will delay monitoring for methyl bromide until the results from the next sampling events are available due to the sampling history of these wells, the environmental fate - it is highly volatile and is not expected to migrate to ground water - and lack of recorded applications near the wells.
Ortho-dichloro benzene	12	8.68 – 10.6	Ortho-dichlorobenzene was used as a disinfectant and insecticide in California. All product registrations were cancelled by 1985. CDPH regulates ortho-dichlorobenzene as a drinking water contaminant. The amounts detected did not exceed the MCL (600 ppb). DPR does not respond to reported detections of ortho-dichlorobenzene because it is no longer regulated as a pesticide.
Simazine	1	0.32	Simazine is a registered agricultural herbicide and its use is regulated in areas of the state that DPR has identified as vulnerable to ground water contamination. CDPH regulates simazine as a drinking water contaminant. The amounts detected did not exceed the MCL (4 ppb). DPR does not respond to detections of simazine in areas of California where its use is regulated to prevent further ground water pollution.

Pesticide	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Thiobencarb	1	1.6	Thiobencarb is registered as an herbicide for use only in rice production. CDPH regulates thiobencarb as a drinking water contaminant. Thiobencarb was detected in amount less than the MCL (70 ppb). This detection was reported in Los Angeles County. Rice is not grown in Los Angeles County and no thiobencarb has ever been reported used in the county. DPR will continue to monitor the water system's results for this well but follow-up monitoring by DPR is not likely.
Xylene	5	0.5 – 22	Xylene is a natural component of gasoline and is widely used in industrial manufacturing. It is no longer used as a pesticide but is included in some products as an inert ingredient. CDPH regulates this chemical as a drinking water contaminant. No xylene detections exceeded the MCL of 1,750 ppb or the PHG of 1,800 ppb. DPR no longer responds to xylene detections due to steep declines in its use in pesticide production and difficulty in source identification due to the prevalence of leaking underground gasoline tanks.

CDPH Sampling Results Summarized by County

The number of public supply wells and pesticides sampled annually in each county is related to the number and size of the regulated water systems located within each county. For this reporting period, the median number of public supply wells sampled per county was 22 and ranged from 669 in Los Angeles County to one well in Del Norte and Nevada counties. The median number of pesticides analyzed per county was 54 and ranged from 92 in San Bernardino County to two in Mono County. CDPH did not report sampling data for Alpine, Imperial, Modoc, San Francisco and Trinity counties (Appendix D).

Of the 3,590 public supply wells sampled by water purveyors, pesticide residues were detected in 9% (315) of the wells sampled; pesticides were not detected in 91% (3,275) of sampled wells (Table 1). Water purveyors reported finding one pesticide in 307 wells with reported pesticide detections (97%), two pesticides in 7 wells with pesticide detections (2%), and three pesticides in one well with pesticide detections (<1%)(CDPR 2009).

Although its use as an agricultural fumigant was banned in the early 1980s, DBCP continues to be the most frequently detected pesticide with detections in 272 of the 1,821 public supply wells sampled for this chemical (Appendix B and Appendix E).Counties with large agricultural production areas had the highest percentage of wells with detections versus the total wells sampled: Fresno (34%), Merced (24%),Tulare (20%), San Joaquin (19%), Stanislaus (19%), Kern (11%), Contra Costa (10%) Madera (10%) and San Bernardino (10%) (Table 4).

Table 4. Public supply wells with pesticide detections reported by CDPH summarized by county and pesticide.

COUNTY	*Wells Sampled*	*Wells w/ Detections*	*Pesticides Detected*	*1,2-D*	*1,3-D*	*Atrazine*	*Carbon disulfide*	*Dacthal*	*Dacthal degradates*	*DBCP*	*Diquat dibromide*	*Ethylene dibromide*	*Lindane*	*Methoxychlor*	*Methyl bromide*	*Ortho-dichlorobenzene*	*Simazine*	*Thiobencarb*	*Xylene*
Butte	50	1	1																1
Contra Costa	10	1	1							1									
Fresno	305	106	4	1	1					10 5		3							
Kern	195	28	7	3		1				22		1	1	2					1
Lake	22	1	1								1								
Los Angeles	669	12	4					1		1						9		1	
Madera	50	5	2							5		1							
Mendocino	12	1	1								1								
Merced	49	12	1							12									
Monterey	96	1	1																1
Riverside	225	12	2					1		11									
Sacramento	123	2	2							1		1							
San Bernardino	338	35	2						1	34									
San Diego	41	1	1	1															
San Joaquin	102	21	3	2						19		1							
San Luis Obispo	50	4	2									1			3				
San Mateo	21	3	2	2	1														
Santa Cruz	53	1	1				1												
Sonoma	91	4	1							4									
Stanislaus	123	23	1							23									
Tulare	166	35	2							34							1		
Ventura	63	5	3												1	3			1
Yuba	15	1	1																1

Department of Pesticide Regulation Sampling Results

DPR Sampling Results Summarized by Pesticide

From July 2008 through June 2009, DPR monitored 102 wells for 21 pesticides and pesticide degradation products as part of the following studies:[13]

- Protocol for Monitoring the Concentration of Detected Pesticides in Wells Located in Highly Sensitive Areas (Garretson, 1999).
- Protocol for Ground Water Protection List Monitoring for Metolachlor, S-Metolachlor, and Imidacloprid (Bergin, R. and C. Nordmark, 2009)

DPR detected 6 pesticides and 4 of their degradation products in 65 public and private drinking water wells in Fresno and Tulare counties (Table 1, Table 5 and Appendix B). We annually detect atrazine, bromacil, diuron, norflurazon, prometon, simazine, and several degradates in agricultural areas where these pesticides have been used. In the mid-1980s, DPR began restricting the use of most of these pesticides after finding that their legal agricultural use had caused ground water contamination. Norflurazon was added to the list of regulated ground water contaminants after it was also detected in ground water in the 1990s. DPR's ground water protection regulations require growers and professional applicators to observe strict application requirements for these commonly detected pesticides in areas of California that are vulnerable to ground water contamination.

No detections exceeded drinking water quality standards established by CDPH, PHGs established by OEHHA, or advisory levels established by the U.S. EPA (Table 5 and Appendix C).

Table 5. Pesticides detected by DPR from July 2008 through June 2009 and DPR's response to these detections.

Pesticides Detected	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
ACET (Deethyl-simazine or deisopropyl-atrazine)	60	0.053 – 1.33	ACET is a degradation product of atrazine and simazine. DPR routinely samples ground water for this degradation product and controls potential contamination by regulating the parent pesticides. Neither CDPH nor OEHHA have established mandatory or advisory health levels for ACET.

[13] See the following section, "Actions Taken to Prevent Ground Water Contamination," for more information about these studies.

Pesticides Detected	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
Atrazine	2	0.055 – 0.089	Atrazine is registered for use as an agricultural herbicide and is regulated by DPR as a ground water contaminant. DPR routinely samples ground water for atrazine. CDPH regulates this chemical as a drinking water contaminant.[14] None of the atrazine detections exceeded the MCL of 1 ppb or the PHG of 0.15 ppb.
Bromacil	21	0.052 – 4.49	Bromacil is registered for use as an agricultural herbicide and is regulated by DPR as a ground water contaminant. DPR routinely samples ground water for bromacil. Neither CDPH nor OEHHA have established mandatory or advisory health levels for ACET for bromacil.
DACT (Diamino-chlorotriazine)	58	0.05 – 4.98	DACT is a degradation product of atrazine or simazine. DPR routinely samples ground water for this degradation product and controls potential contamination by regulating pesticides containing the parent pesticide. Neither CDPH nor OEHHA have established mandatory or advisory health levels for ACET for DACT.
DEA (Deethyl-atrazine)	14	0.055 – 0.537	DEA is a degradation product of atrazine. DPR routinely samples ground water for this degradation product and controls potential contamination by regulating pesticides containing the parent active ingredient. Neither CDPH nor OEHHA have established mandatory or advisory health levels for ACET for DEA.
Diuron	31	0.05 – 0.498	Diuron is registered as an agricultural herbicide and is regulated by DPR as a ground water contaminant. DPR routinely samples ground water for diuron. Neither CDPH nor OEHHA have established mandatory or advisory health levels for ACET for diuron.

[14] See Appendix B for more information about mandatory water quality standards established by CDPH, public health goals set by OEHHA, and suggested limits established by the U. S. EPA.

Pesticides Detected	*Wells with Detections*	*Amount Detected (ppb)*	*DPR Detection Response*
DSMN (Desmethyl-norflurazon)	32	0.05 – 0.803	Desmethyl-norflurazon is a degradation product of norflurazon. DPR routinely samples ground water for this degradation product and controls potential contamination by regulating pesticides containing the parent pesticide. Neither CDPH nor OEHHA have established mandatory or advisory health levels for ACET for desmethyl-norflurazon.
Norflurazon	14	0.055 – 0.537	Norflurazon is registered as an agricultural herbicide and is regulated by DPR as a ground water contaminant. DPR routinely samples ground water for norflurazon. Neither CDPH nor OEHHA have established mandatory or advisory health levels for ACET for norflurazon
Prometon	1	0.062	Prometon is registered as an agricultural herbicide and is regulated by DPR as a ground water contaminant. DPR routinely samples ground water for prometon. Neither CDPH nor OEHHA have established mandatory or advisory health levels for ACET for prometon.
Simazine	41	0.053 – 0.171	Simazine is registered as an agricultural herbicide and is regulated by DPR as a ground water contaminant. DPR routinely samples ground water for simazine. CDPH regulates this chemical as a drinking water contaminant. None of the simazine detections exceeded the MCL of 4 ppb or the PHG of 4 ppb.

DPR Sampling Results Summarized by County

DPR sampled 102 public and private drinking water wells in 7 counties for pesticides regulated as ground water contaminants (atrazine, bromacil, diuron, norflurazon, prometon, simazine), several degradation products (Table 1 and Appendix D), and for pesticides that have been detected but are not yet regulated as ground water contaminants (hexazinone, tebuthiuron and four tebuthiuron degradation products). These pesticides include herbicides that are used to control weeds in a variety of crops and on roadsides and other rights-of-way. Sixty-eight of the sampled wells compose DPR's well network and are located in Ground Water Protection Areas in Fresno and Tulare counties. DPR established this well network to assess the long term effects of use restrictions on pesticide concentrations in ground water. The wells were chosen for the network, in part, because they had a history of ground water contamination. The remaining thirty-four wells, located in five coastal counties, were also monitored for imidacloprid, an insecticide, and four imidacloprid degradation products (Appendix B).

DPR detected ten pesticides and pesticide degradation products in 65 of the 68 network wells in Fresno and Tulare counties (Table 6 and Appendix D). DPR did not detect any pesticides in the wells sampled in Monterey (19 wells), San Benito (2 wells), San Luis Obispo (3 wells), Santa Barbara (9 wells), and Ventura (1 well) counties (34 wells total)(Appendix D) that were a part of the imidacloprid study.

DPR has a higher detection rate than CDPH because our monitoring goals are different:

- DPR selectively monitors in vulnerable areas where large amounts of agricultural pesticides are used in crop production or rights-of-way.
- Annually, DPR samples a network of 60 to 70 domestic wells in Fresno and Tulare counties that have a history of pesticide contamination. DPR established this network in 1999 to assess the effectiveness of more stringent pesticide use regulations.
- DPR uses analytical methods that allow the unequivocal identification of pesticide residues as low as 0.05 ppb. Mandatory water quality limits for pesticides used in the regulation of public drinking water wells tend to be higher than 0.05 ppb (Appendix C).

Table 6. Wells with pesticide detections reported by DPR summarized by county and pesticide.

County	Wells Sampled	Wells with Detections	ACET	Atrazine	Bromacil	DACT	DEA	Diuron	DMN	Norflurazon	Prometon	Simazine
Fresno	49	46	44	1	12	42	9	20	24	9	1	30
Tulare	19	19	16	1	9	16	5	11	8	5	0	11
Total	**68**	**65**	**60**	**2**	**21**	**58**	**14**	**31**	**32**	**14**	**1**	**41**

Well Location Information

The PCPA requires the annual report to give the location of wells for which sampling results were reported. Privacy and security concerns and the large number of wells sampled prevent DPR from listing exact well locations. Instead, this report summarizes the locations by county. DPR can provide general location information (county, township, range, and section) to members of the public upon request.

For more information on the availability of well monitoring information, please refer to DPR's Policy on Release of Well Data Collected by the Department of Pesticide Regulation Concerning Wells Sampled for Pesticide Residue <http://www.cdpr.ca.gov/docs/emon/grndwtr/index.htm>, or contact DPR's Ground Water Protection Program at 916-324-4039.

ACTIONS TAKEN TO PREVENT GROUND WATER CONTAMINATION

DEPARTMENT OF PESTICIDE REGULATION

As required by PCPA (FAC 13152), this section describes recent actions by DPR to prevent pesticides from migrating to California's ground water.

Protecting Vulnerable Areas from Pesticide Contamination

Regulating the Use of Pesticides Found in Ground Water through Permitting

Figure 2. Ground water protection areas (GWPAs).

Under the PCPA, pesticides detected in ground water at levels that pollute or threaten to pollute ground water were usually expected to be prohibited unless future contamination could be controlled. From 1989–1999, DPR adopted mandated statewide mitigation measures for aldicarb and bentazon, and some mandatory but mainly advisory mitigation measures for atrazine, simazine, bromacil, diuron, prometon, and norflurazon that applied only in "Pesticide Management Zones" (PMZs). PMZs, which were one-square mile sections of land around contaminated wells, had grown to encompass about 313,000 acres statewide by 2003.

In 2004, DPR adopted regulations to expand the areas where certain pesticides[15] are regulated to 2.4 million acres (Figure 2), and to adopt mandatory mitigation measures to protect ground water[16]. Called "ground water protection areas" (GWPAs), these new areas include all the

[15] 3 CCR section 6800(a) includes atrazine, bentazon (Basagran ®), bromacil, diuron (except for products with less than 7% diuron that are applied to foliage), norflurazon, prometon, and simazine.

[16] 3 CCR sections 6416, 6487.1 – 6487.5

former existing and draft PMZs as well as sections of land with no reported detections but with soil types and depths-to-ground water that are characteristic of contaminated areas. Based on the pathway of pesticide movement to ground water, GWPAs are designated as either leaching or runoff. For the first time, DPR had identified a basis for not only regulating pesticides to prevent pesticide contamination before it occurs but also for targeting mitigation measures to the pathway of contamination. Property operators, such as growers, must obtain a permit from the CAC before they may use a regulated pesticide in a leaching or runoff GWPA. The permit specifies the pesticide use modifications, tailored to the specific vulnerability of the intended treatment site, which the permittee must follow. The permittee must notify the CAC within 24–48 hours before application so that the CAC may inspect the site before the application to determine whether the permit use modifications are still appropriate, and during and after the application to ensure compliance with the permit.

In addition, DPR continues to enforce statewide regulations to protect ground water from the use of aldicarb and bentazon (3 CCR sections 6458 and 6457, respectively).

For more information on the regulation of pesticide ground water contaminants in California, please refer to the DPR Fact Sheet titled: "A Better Way to Protect Ground Water." (CDPR, 2004). Available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/factsheet.pdf>.

Assessing the Effectiveness of Mitigation Measures

In 1999, DPR initiated a long term monitoring study to measure the effectiveness of the anticipated regulations that were enacted in 2004 to protect ground water from further contamination by pesticide residues. The wells were selected on the basis of type, location and monitoring history. DPR's well monitoring network is comprised of 60 to 70 shallow, domestic wells located in runoff and leaching GWPAs in Fresno and Tulare counties. Previous sampling by DPR showed that all of the candidate wells contained residues of pesticides regulated as ground water contaminants, including simazine, bromacil, and/or diuron.

In the fall of 1999, 75 wells were sampled for 6 herbicide parent compounds that are subject to use modifications based on their potential to contaminate groundwater–atrazine, simazine, diuron, bromacil, prometon, and norflurazon–and three of their breakdown products–DEA (a degradate of atrazine), and ACET and DACT (degradates of atrazine and simazine). The wells were also tested for four additional herbicides with the potential to pollute ground water: prometryn, hexazinone, cyanazine, and metribuzin. Sampling was conducted in the spring and the fall through 2002. In 2003, DPR eliminated the fall sampling event and currently only samples during the spring. In 2001, DPR eliminated prometryn, cyanazine, and metribuzin from the laboratory analysis because they were not detected in any of the preceding samples. In 2002, DPR added three hexazinone degradation products to the analytical method but, after none were found, eliminated them from the analysis prior to the next sampling period in 2003. In 2004, DPR added a degradate of norflurazon, DSMN, to the analytical method. DSMN residues were found in subsequent well network samples; DPR continues to monitor for DSMN and often finds it where the parent, norflurazon, is applied. Tebuthiuron, an herbicide used in noncrop areas, was added to the screen in 2009. None was detected, but DPR will continue to monitor for it due to its increasing use in areas that are deemed to be potentially vulnerable to groundwater

contamination. Over the years some of the wells were dropped from the study and in 2009, DPR sampled 68 of the original 75 wells.

DPR has detected simazine and its degradation products, ACET and DACT, in nearly all the wells at one or more sampling intervals. Diuron has been found in around half of the wells sampled and bromacil in at least a third of them. Norflurazon has been found in over 20% of the wells, but its degradation product, DSMN, has been detected in almost half the wells. DPR detected atrazine, prometon, and hexazinone at a much lower frequency than the other analytes: three wells or fewer to date. Average concentrations varied and were approximately:

- 0.1 ppb for atrazine, simazine, prometon, hexazinone and DEA
- 0.2 to 0.3 ppb for norflurazon, diuron and DSMN
- 0.5 ppb for ACET
- 1.0 ppb for DACT and bromacil

A report that includes in-depth statistical analysis and discussion of measured trends is under review and is expected to be published in 2011. Preliminary findings from that report will include statistical analyses for trends in concentration over time that were conducted at two levels of detail. In one where all wells were pooled together, the analysis indicated a trend of decreasing concentrations for simazine, diuron, and bromacil over time, but a trend of increasing norflurazon concentrations. In the second where individual wells were analyzed, there were some deviations in these trends. For the pooled data, the decreasing concentrations for simazine, diuron, and bromacil were likely the result of the ground water protection regulations for those herbicides that have been in effect since the early 1990s. The increasing concentrations of norflurazon are probably due to several factors: (1) increased use of norflurazon as an alternative to the more heavily regulated simazine, diuron and bromacil, which required permits and additional ground water protection use restrictions for use; (2) norflurazon has only been regulated to protect ground water initially since 2001 and in the expanded ground water protection areas since mid 2004; and (3) since the median time for residues to travel from the ground surface to a well is seven to nine years in the area sampled (Spurlock, 2000), the norflurazon regulations have not been in effect long enough yet to result in lower ground water concentrations. Continued monitoring of this network will allow DPR to assess the effectiveness of the GWPAs, implemented in 2004, that sought to protect groundwater on a regional, rather than on a pesticide-specific basis. Further analysis of pesticide use patterns, agricultural practices, well construction, and other observational information could also provide important information to explain observed effects for each well.

For more information about DPR's Domestic Well Network, refer to:

Garretson, C. 1999. Study 182: Protocol for Monitoring the Concentration of Detected Pesticides in Wells Located in Highly Sensitive Areas. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol.htm>.

Garretson, C. 2009. Study 182 / 228–Preliminary Summary of Results for Well Sampling from 1999 through 2009. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/memos.htm>.

DPR is also working on the development of pesticide use modifications that protect ground water and are practical and effective. The most recent effort focused on the application of preemergent herbicides through a low volume micro-sprinkler irrigation system. DPR expects to complete the study report by late 2010. For more information on this study, please refer to:

DaSilva, A. 2007b. Study 241 - Protocol to Demonstrate the Effectiveness of Chemigation of Pre-emergence Herbicides through Low-Volume Micro-Sprinkler Irrigation Systems on a Sandy Soil. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol/241prot.pdf>.

For more information on earlier, related studies, please refer to:

Troiano, J. 2003. Study 221 - Protocol to Demonstrate the Effectiveness of Chemigation of Pre-emergence Herbicides through Low-Volume Irrigation Systems. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol/prot221.pdf>.

Basinal, L., T. Jacobsen, A. Da Silva, J. Troiano, P. Reising, D. Laird, D. Stubbs, and A. Barefoot. 2007. Demonstration of Effectiveness of Chemigation of Pre-emergence Herbicides Applied through Low Volume Irrigation Systems. Final Report to DPR. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/eh0701.pdf>.

DaSilva, A., 2007a. Study 221-Demonstration Study on Chemigation of Simazine and Diuron on Citrus Orchard in Tulare County. Available at: <http://www.cdpr.ca.gov/docs/emon/surfwtr/caps/study221memo.pdf>.

Dias, J. and A. DaSilva. 2008. Preliminary Results for Study 221: Effect of Chemigation Injection Speed on the Efficacy and Leaching of the Pre-Emergence Herbicides Simazine and Diuron. Available at: <http://www.cdpr.ca.gov/docs/emon/surfwtr/caps/studymemo_221.pdf>.

Identifying Potential Ground Water Contaminants

The purpose of the PCPA (FAC sections 13141–13152) is to prevent pesticide pollution of ground water of the state that may be used for drinking water supplies. The PCPA outlines procedures for:

1) Obtaining physical and chemical data on agricultural use pesticide active ingredients from pesticide manufacturers (registrants).
2) Establishing specific numerical values (SNVs [threshold values]) for data that the PCPA associates with the potential of a pesticide to leach through soil to ground water.
3) Identifying registered agricultural use pesticides that exceed one or more of the SNVs in both categories for persistence and mobility and posting this list to DPR's Web site annually. [17]
4) Placing agricultural pesticides that exceed the SNVs and are applied in specified ways[18] on the Groundwater Protection List (GWPL) (3 CCR section 6800[b]).
5) Monitoring for pesticides identified as potential contaminants to determine if they have migrated to ground water as a result of legal agricultural use.

For more information, please refer to DPR's Ground Water Protection List Home Page at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/list_mon.htm>.

To facilitate primary goal of preventing further pollution of ground water, DPR developed several key processes to evaluate an agricultural pesticide's pollution potential: the creation of a physical-chemical properties database, modeling a pesticide's fate in the environment, evaluating new pesticides for potential leaching prior to registration, and the prioritization of pesticides for monitoring.

Collecting Environmental Fate Data on Agricultural Pesticides

DPR maintains information on the physical and chemical properties of agricultural pesticides in the Pesticide Chemistry Database and uses that data to create SNVs. The SNVs are threshold values that DPR is required to establish for six properties of pesticides; water solubility, K_{oc} (soil adsorption coefficient), hydrolysis half-life, aerobic soil metabolism half-life, anaerobic soil metabolism half-life, and field dissipation half-life. The values established must be at least equal to those established by the U.S. EPA. Currently, neither the U.S. EPA nor DPR have established a threshold value for terrestrial field dissipation half-life, although registrants of agricultural use pesticides must provide at least two studies to fulfill California's registration requirements. DPR screens each registered agricultural use pesticide against the five remaining SNVs, thus identifying pesticides that appear to be mobile and persistent and may have the potential to contaminate ground water. Every year, DPR updates the database and posts on its Web site a

[17] The SNVs associated with mobility are water solubility (> 3 ppm) and soil adsorption coefficient (Koc) (< 1900 cm2/gm), and the SNVs associated with persistence are hydrolysis (> 14 days half-life), aerobic soil metabolism (> 610 days half-life), and anaerobic soil metabolism (> 9 days half-life) (FAC section 13144 and 3CCR section 6804).

[18] The pesticide is intended to be applied to, or injected into, the soil by ground-based application equipment or by chemigation; or the label of the pesticide requires or recommends that the application be followed within 72 hours by flood or furrow irrigation.

new report that lists the pesticides, and their uses, that exceed, or are less than in the case of Koc, the SNVs.

The Pesticide Chemistry Database is currently undergoing an extensive quality control review. Staff is validating the database and correcting any deficiencies that are found. Data values for terrestrial field dissipation are being recalculated per a standard operating procedure (SOP) for consistency and clarity. Also, DPR plans to reevaluate the SNVs based on new data, when available.

To view the most recent report of agricultural pesticides that exceed mobility and persistence criteria, please see:

Bergin, R. 2009 Status Report Pesticide Contamination Prevention Act. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/report_pcpa09.pdf>.

Improving Contaminant Transport Computer Modeling Tools

DPR currently uses the LEACHM pesticide fate and transport model (Hutson and Wagenet, 1992) to help evaluate the environmental behavior of pesticides in the environment. A modeling scenario was developed to simulate pesticide fate and movement in a California soil considered vulnerable to pesticides with the potential to leach (Spurlock, 2000). The model simulates an agricultural cropping scenario under typical weather conditions. Natural rainfall is supplemented with irrigation applications made during the active growing season. Pesticide applications are simulated at maximum label rates. Various physical-chemical properties of the pesticide under evaluation are used. Values for these properties that are particularly sensitive to model output are selected from their respective range of distribution and substituted into successive model simulations. A distribution of model-predicted outcomes results from the successive simulations. With the aid of statistical methods, estimates of pesticide concentrations in ground water are derived, with each estimate assigned a level of probability of occurrence (Troiano and Clayton, 2009). The predicted concentrations in ground water and their associated probabilities are considered when assessing a pesticide's potential to threaten California ground water.

This modeling tool is used to help evaluate the ground water contamination potential of new and existing active ingredients in products submitted for California registration where concerns of ground water contamination exist. The LEACHM model, in conjunction with other factors, is also used as a tool by DPR to help prioritize pesticides for routine ground water monitoring throughout the state. Pesticides presenting a higher estimated threat of contaminating ground water generally receive priority for ground water monitoring. Computer modeling has also been used to aid in the design of DPR field studies investigating the movement and fate of pesticides in the soil.

A limitation with the current modeling scenario is the inability to assign depth-specific residue dissipation rates to a soil profile. Studies have indicated that slower abiotic hydrolytic processes rather than biotic degradation processes dominate pesticide dissipation below soil layers containing organic matter. A field study conducted by DPR (Clayton, 2007) will provide estimates of depth-specific residue dissipation rates for two commonly used pesticides, simazine

and diuron. Data from this study is expected to enhance DPR's capabilities of modeling pesticide fate in the environment. Preliminary analysis of the field data indicates that the dissipation rate of simazine and diuron is reduced at greater soil depths. Posting of the study report is anticipated in 2010.

Clayton, M. 2007. Study 245: Dissipation of simazine and diuron from surface and sub-surface depths in a leaching vulnerable California soil. Available at:
< http://www.cdpr.ca.gov/docs/emon/pubs/protocol/prot245.pdf>.

Spurlock, 2000. Effects of Irrigation Scheduling on Movement of Pesticides to Ground Water in Coarse Soils: Monte Carlo Analysis of Simulation Modeling. Available at:
<http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/eh0001.pdf>.

Troiano, J., and M. Clayton. 2009. Modification of the Probabilistic Modeling Approach to Predict Well Water Concentrations used for Assessing the Risk of Ground Water Contamination by Pesticides. Available at:
<http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/probabilistic_model.pdf>.

Evaluating New Pesticides for Registration and Use in California

DPR thoroughly reviews new, agricultural use pesticides submitted for California registration that have been identified as a possible threat to ground water using the SNVs described previously. DPR staff use data submitted by pesticide registrants and from published sources to assess the potential for a pesticide to contaminate California ground water. Data is reviewed from field trials where pesticides are applied to bare or cropped plots and then monitored for movement and persistence in the soil. These data provide a partial assessment of the potential threat the pesticide might pose to ground water. Persistence data from these studies along with other physical-chemical properties of pesticides and various agronomic practices are used in the LEACHM modeling scenario described above to estimate each pesticide's potential to contaminate ground water in leaching-vulnerable California soils. If it appears that a new pesticide is likely to be detected in ground water following normal application and agronomic practices, DPR will ask the pesticide registrant to supply additional data to determine whether the contamination potential can be mitigated. If so, the registrant can amend the label to mitigate the potential threat to ground water before DPR approves the pesticide for use in California. A perceived continued threat to California ground water would most likely result in denial of California registration.

Between July 1, 2008 and June 30, 2009 DPR evaluated nine pesticides initially categorized as potential ground water contaminants. The pesticides were contained in 14 pesticide products submitted for California registration. Products containing three of these pesticides have a conditional registration limiting their statewide sales for a period of two years. As a condition of registration, the registrants are conducting additional terrestrial field dissipation studies to characterize movement and fate of the pesticides in soil under California climatic and agronomic conditions. The studies have been designed to also help identify mitigation measures that are protective of ground water should the pesticides be determined to potentially threaten ground water under standard use practices. A product containing a fourth pesticide remains under

conditional registration following the submission to DPR of additional field dissipation data. Analysis of these data did not alleviate ground water contamination concerns. Further terrestrial field dissipation data derived under California climatic and agronomic conditions has been requested for this pesticide. A fifth pesticide has initially been denied a registration unless the label is amended with use directions that are protective of California ground water. The amendments addressed crop water application restrictions that were determined to mitigate potential ground water contamination concerns. A response from the registrant is pending. Products containing the remaining four pesticides were not considered to be a serious threat to ground water and full registration of these products was recommended by Ground Water Protection Program staff.

For more information about the method used to assess the ground water contamination potential of pesticides, please refer to:

Troiano, J., and M. Clayton. 2009. Modification of the Probabilistic Modeling Approach to Predict Well Water Concentrations Used for Assessing the Risk of Ground Water Contamination by Pesticides. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/probabilistic_model.pdf>.

Prioritizing Potential Pesticide Contaminants for Monitoring

As required by the PCPA, DPR monitors ground water in California to determine if pesticides on the GWPL have migrated to ground water as a result of legal agricultural use. Prior monitoring results indicate that the risk of ground water contamination varies with the pesticides' environmental fate, use intensity and typical application practices. Since the pesticides on the GWPL do not pose equal risks to ground water, DPR has developed a method to rank the pesticides on this list based on a comparison of their relative risks. This ranking enables DPR to direct limited resources to monitoring the pesticides that pose the greatest risk to ground water.

The ranking scheme relies on information that includes pesticide use and environmental fate data, label-specific information such as application site, rate and method, and whether the pesticide is currently registered for use. DPR assigns higher priority for analytical method development and field monitoring to agricultural pesticides that:

- Have a higher likelihood of ground water contamination due to their persistence and mobility in soil based on computer simulated contaminant transport modeling. The modeling scenario is similar to that described previously.
- Are used intensively or whose use is increasing based on data collected through DPR's Pesticide Use Reporting Program.
- Are primarily either applied directly to the soil or are "watered in" soon after application.

Other qualitative factors, such as application method, use site, and the existence of previous detections in California or nationwide are considered in the ranking process. Based on the first iteration of this developing process, DPR selected iprodione, azoxystrobin, dichloran, vinclozalin, and chlorothalonil for analytical method development and monitoring in 2010 (Pyatt, 2009).

DPR anticipates publishing the final GWPL ranking process to our GWPL Home Page at: <www.cdpr.ca.gov> in 2010.

Pyatt, E. 2009. 2009 Request to Develop Analytical Methods for Azoxystrobin, Chlorothalonil, Dichloran, Iprodione, and Vinclozolin and Significant Degradates in Well Water. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/iprodione_and_other_fungicides.pdf>.

Monitoring for Potential Pesticide Contaminants

Monitoring for Metolachlor and Imidacloprid –GW09

In 2009, DPR initiated a GWPL monitoring survey for metolachlor, s-metolachlor, imidacloprid, and the main degradates of these pesticides to determine if they have migrated to ground water in areas with high reported agricultural use or identified as being vulnerable to groundwater contamination by pesticides. Metolachlor and imidacloprid, agricultural pesticides on the GWPL, were selected for monitoring based on reported pesticide use trends, physical-chemical properties, and the availability of laboratory analytical methods that provide unequivocal identification of the parent pesticides and their degradation products.

From February to March 2009, DPR sampled 34 wells in Monterey, San Benito, San Luis Obispo, Santa Barbara, and Ventura counties for imidacloprid, four imidacloprid degradates and atrazine, bromacil, diuron, hexazinone, norflurazon, prometon, simazine and tebuthiuron and degradation products of several of these pesticides (triazine screen). The triazine screen includes agricultural use pesticides, and their breakdown products, that are regulated as ground water contaminants[19] or are under investigation as potential ground water contaminants. No residues of imidacloprid, imidacloprid degradates, or pesticides on the triazine screen were detected in any of the wells. All sampling for imidacloprid is completed and the final report is posted to DPR's website (Bergin and Nordmark, 2009).

From April to May 2009, DPR sampled 21 wells in Stanislaus and San Joaquin counties for metolachlor, metolachlor ESA, metolachlor OXA and pesticides on the triazine screen. DPR plans to sample an additional 45 wells for these pesticides in Stanislaus, San Joaquin, Kings, Sacramento, Solano, and Yolo counties. A final report on metolachlor monitoring will be completed in 2010.

For more information about current monitoring for imidacloprid and metolachlor, please refer to:

Bergin, R. and C. Nordmark, 2009. GW09–Protocol for GWPL Monitoring for Metolachlor, S-Metolachlor, and Imidacloprid. Available at: <http://www.cdpr.ca.gov/docs/emon/surfwtr/protocols/studygw09protocol.pdf>.

[19] 3 CCR section 6800(a) includes: atrazine, bentazon (Basagran ®), bromacil, diuron (except for products with less than 7% diuron that are applied to foliage), norflurazon, prometon, and simazine.

Bergin, R. and C. Nordmark, 2009. GW 09-GWPL Monitoring Results for Imidacloprid and Four of Its Degradates. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/report_gw09a.pdf>.

For the results of our previous monitoring studies of these pesticides, please refer to:

Weaver, D. and C. Nordmark. 2002. Alachlor, Metolachlor and Two Degradates of Each. Available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/rpts/gwpl_0001.pdf>.

Weaver, D. and C. Nordmark. 2004. Imidacloprid and Three of Its Degradates. Available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/rpts/gwpl_0304.pdf>.

Monitoring Ground Water Vulnerability Outside GWPAs

DPR is currently conducting a study to assess the vulnerability of areas outside current GWPAs by monitoring for regulated and suspected pesticide contaminants. It is expected that further results for this study will be available for the 2010 version of this report. For more information about this study please refer to:

Nordmark, C, Fossen, M. and Marade, J. 2007. Study 240: Protocol for Monitoring Ground Water in Sections with Reported Detections Outside Existing GWPAs. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol.htm>.

STATE and REGIONAL WATER RESOURCES CONTROL BOARDS

As required by PCPA (FAC 13152), this section, prepared by the SWRCB and the RWQCBs, describes recent actions taken to prevent pesticides from migrating to California's ground water. This information is also available on the State Water Board's Web site at: <http://www.waterboards.ca.gov/water_issues/programs/gama/docs/ab2021_fy0809.pdf>.

State Water Board

State Water Board staff participated in the following activities:

- Regularly attended meetings sponsored by the Department of Pesticide Regulation (DPR), including the interagency Pesticide Registration and Evaluation Committee (PREC) and Pest Management Advisory Committee (PMAC).

- Participated in ongoing consultations with DPR staff, University of California (UC) scientists, and pesticide manufacturers to design monitoring studies and Best Management Practices (BMPs).

- Participated in discussions with U.S. Geological Survey (USGS) scientists on studies dealing with pesticides and water quality.

- Reviewed, on an ongoing basis, DPR Notices of "Materials Entering Evaluation" and advised DPR on potential water quality impacts of pesticide registration and use decisions.

- Reviewed and commented on DPR's proposed studies on pesticide and water quality pursuant to the Management Agency Agreement (MAA) with DPR.

- In coordination with the USGS and Lawrence Livermore National Laboratory (LLNL), the State Water Board is implementing the Groundwater Ambient Monitoring and Assessment Program (GAMA). To date, the GAMA–Priority Basins Project has sampled over 1,835, mostly public water supply wells, for various chemicals and parameters, including pesticides, herbicides and their degradates. The water quality results for the following study units are summarized in Table 7: Southern and Central Sierra, East-Central San Joaquin Valley, Southeast San Joaquin Valley, North San Joaquin Valley, South Sacramento Valley, Middle Sacramento Valley, Upper Los Angeles Basin, North San Francisco Bay, Salinas-Monterey, San Diego, Mojave, and Kern County.

SWRCB–Actions Taken in Fiscal Year 2008–2009, con't.

- The State Water Board sampled over 137 domestic wells in San Diego County for various chemicals and contaminants, including pesticides, herbicides and their degradates. The results are summarized in Table 7.

Table 7. Actions taken by the State Water Resources Control Board in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
San Diego Study Unit,	Various GAMA monitoring sites	Pesticides, Herbicides, and Degradates	The GAMA Program has sampled over 1,835 drinking water supply wells for various chemicals, including pesticides, herbicides and their degradates. Fifty-eight wells were sampled in the San Diego, Orange and Riverside counties. Out of 122 pesticides, herbicides and degradates analyzed, simazine, deethylatrazine, prometon, and atrazine were the most frequently detected at maximum concentrations of 0.181, 0.013, 0.03 and 0.85 µg/L respectively. Seventeen other pesticides, herbicides, and degradates were detected (no concentrations were detected above drinking water standards).
North San Francisco Study Unit	Various GAMA monitoring sites	Pesticides, Herbicides, and Degradates	Eighty-nine public supply wells were sampled in the Napa, Marin, Sonoma and Solano counties. Out of 122 pesticides, herbicides and degradates analyzed, simazine was the most frequently detected at maximum concentration of 0.052 µg/L. Chlordiamino-s-triazine and deisopropyl atrazine were both found in two wells at estimated concentration of E0.01 µg/L.
North San Joaquin Study Unit	Various GAMA monitoring sites	Pesticides, Herbicides, and Degradates	Seventy public supply, irrigation, domestic and monitoring wells were sampled in the San Joaquin, Sacramento, Stanislaus and Contra Costa counties. Out of 122 pesticides, herbicides and degradates analyzed, fifteen were detected. The most frequently detected was Simazine at maximum concentration of 0.058µg/L. Atrazine, Metolachlor, Hexazinone, Tebuthiuron, Diphenamid, Deethylatrazine, 2,6-diethylaniline, and 3,4-Dichloroaniline were also found at maximum concentrations of 0.081, 0.012, 0.066, 0.03, 0.02, 0.046, 0.004, and 0.045 µg/L, respectively. Two herbicides, DBCP and 1,2-Dibromoethane, were found at respective concentrations of 1.43 and 0.14 µg/L, which are above MCL for these chemicals.
Monterey - Salinas Valley Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Ninety four public wells and 3 monitoring wells were sampled in the Monterey, Santa Cruz and San Luis Obispo counties. Out of 122 pesticides, herbicides and degradates analyzed, nine were detected. The most frequently detected was Simazine at maximum concentration of 0.02µg/L. Deethylatrazine, Atrazine, Dacthal, Metolachlor, Deisopropyl atrazine, Dieldrin, Prometone and Terbuthylazine were found at estimated concentrations of E0.01, 0.035, E0.004, E0.007, E0.004, E0.006, E0.01, and E0.01µg/L, respectively.

SWRCB–Actions Taken in Fiscal Year 2008–2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Southern Sierra Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Forty public wells (5 irrigation, 5 domestic) were sampled in this study unit in Kern and Tulare counties. Out of 63 pesticides, herbicides and degradates, five were detected. Most frequently detected were Atrazine (9), Deethylatrazine (10) and Simazine (6) at maximum concentration of 0.008, E0.012, and 0.008µg/L respectively. Prometon and Fipronil sulfide were found at max. concentrations of E0.01and E0.005µg/L, respectively.
Central Sierra Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Twenty seven public wells and 3 domestic wells were sampled in this study unit (Madera and Mariposa counties). Out of 83 pesticides, four were detected. The most frequently detected was Simazine (4) at max. concentration of E0.008µg/L, Deethylatrazine (2), 3,4-Dichloroaniline (2) and Atrazine (1) were found at max. concentrations of E0.007, E0.006 and E0.004µg/L, respectively.
Southern Sacramento Valley Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Eighty three public, irrigation, domestic and monitoring wells were sampled in this study unit (Placer, Sacramento, Sutter and Yolo counties). Out of 70 pesticides and degradates analyzed in all wells, 12 were detected. Out of additional 50 pesticides analyzed in selected wells, 10 were detected. The most frequently detected was Deethylatrazine (21) and Atrazine (15) at max. concentrations of E0.029 and 0.038 respectively. Herbicides; 3,4 Dichloroaniline (3), Molinate (3), Simazine (3), Metolachlor (2), Hexazinone (1), Prometon (1), Tebuthiuron (1) and Metalaxyl (2) were detected at max. concentrations of E0.062, 0.066, 0.013, E0.006, E0.012, E0.007, 0.115 and 0.006 µg/L, respectively. Metalaxyl,(2), Dieldrin (2) and Isofenphos (1) were detected at 0.006, E0.004 and 0.006 µg/L, respectively. Out of additional list, Oxamyl (7), Bentazon (4), Bromacil (2), 2,4 D (1), Diuron (1), Fenuron (1), Diphenamid (1) and Deisopropyl atrazine (2) were detected at 0.08, 0.26, E0.01, E0.005, 0.029, 0.028, E0.01 and 0.042 µg/L, respectively.
Central Eastside San Joaquin Basin	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Forty three public, 9 domestic, 6 irrigation, 3 commercial, 2 drain, and 15monitoring wells were sampled for this study unit (Merced and Stanislaus counties). Out of 115 pesticides, herbicides and degradates, 11 were detected. The most frequently detected were Deethylatrazine (26), Simazine (19), and Atrazine (17) at max. concentrations of E0.016, 0.112 and 0.014 µg/L, respectively. Metolachlor (7), DBCP (5), 3,4 -Dichloroaniline (2), Prometon (2), Hexazinone (4), Deisopropyl atrazine (3), Diuron (1) and Norflurazon (2) were detected at max. concentrations of 0.035, 1.44, E0.01, 0.01, 0.062, E0.01, 0.03, and E0.01µg/L, respectively.

SWRCB–Actions Taken in Fiscal Year 2008–2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Kern	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Forty public, 5irrigation, 4 domestic and 1 fire protection well were sampled for this study unit (San Joaquin and Kern counties). Out of 146 pesticides, herbicides and degradates, 12 were detected. The most frequently detected were Deethylatrazine (19), Simazine (18), and Atrazine (18) at max. concentrations of E0.011, 0.033 and 0.02 µg/L, respectively. EPTC (7), 3,4-Dichloroaniline (6), Prometryn (3), Hexazinone (2), Metolachlor (2), Prometon (2), Chlorpyrifos (1), Dieldrin (2) and Metribuzin (1) were detected at max. concentrations of 0.032, E0.006, 0.009, 0.017, 0.014, E0.01, 0.006, E0.007, and 0.01 µg/L, respectively. Out of polar pesticides and degradates; Deisopropyl atrazine (5), Dinoseb (4), Bromacil (1), Diphenamid (2), Diuron (1) and Imazetaphyr (1) were detected at max. concentrations of E0.04, E0.03, E0.01, 0.03, 0.07 and E0.01µg/L, respectively.
Middle Sacramento Valley Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	One hundred eight wells (including 15 shallow monitoring wells at the rice field) were sampled in Butte, Colusa, Glenn, Sutter, Tehama, Yolo and Yuba counties. Out of 135 pesticides and degradates, 30 were detected in water samples, all detections were less than one-hundredth of health-based threshold values. The most common were: bentazon (21), simazine (17), atrazine (17) and deethylatrazine (19) at maximum conc. of 1.82, 0.024, 0.077 and E0.057 µg/L, respectively.
Southeast San Joaquin Valley Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Ninety nine, mostly public supply wells, were sampled in Fresno, Tulare and Kings counties. Out of 136 pesticides and degradates 28 were detected, all below any health-based threshold values. The most common were: Simazine, atrazine, and deethylatrazine, deisopropyl atrazine (degradates) at max. concentrations of 0.138, 0.027 µg/L and E0.021, E0.32 µg/L, respectively.
Upper Los Angeles Basin Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Fifty two wells (47 public, 3 industrial, 2 irrigation) were sampled in Los Angeles county. Out of 122 pesticides and degradates, 22 were detected, all below health-based thresholds. The most common were Simazine, Atrazine, Prometon, and Tebuthiuron at max. concentrations of 0.14, 0.116, 0.04 and 0.14 µg/L respectively. Also very common was deethylatrazine, a degradate, at max. concentration of 0.045 µg/L.
South Coast Interior Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Fifty four (31 public, 8 domestic, 7 irrigation, 7 monitoring, 1 industrial) wells were sampled in Alameda (Livermore area), Santa Clara, San Benito (Gilroy Area) and Santa Barbara, Ventura, Kern (Cuyama area) counties. Out of 63 pesticides and degradates, 6 were detected, all below health-based thresholds. The most common were Simazine and deethylatrazine, measured at max. concentrations of 0.014 and E0.011µg/L, respectively.

SWRCB–Actions Taken in Fiscal Year 2008–2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Mojave Study Unit	Various GAMA sampled wells	Pesticides, Herbicides, and Degradates	Samples from fifty nine (39 public, 9 domestic, 4 irrigation, 4 monitoring, 2 standby, 1 mining) wells were collected in San Bernardino and Los Angeles counties. Out of 63 pesticides and degradates, 10 were detected, all below health-based thresholds. The most common (>10% wells) were simazine, atrazine and deethylatrazine (degradate) at max. concentrations of 0.016, 0.053 and E0.034 µg/L, respectively.
Tulare County	Domestic Wells	Pesticides, Herbicides, and Degradates	One hundred eighty two domestic wells were sampled in Tulare County. Delta Laboratory analyzed water samples for DBCP only. DBCP was found in 26 wells at maximum concentration of 1.63µg/L. Additionally, LLNL analyzed water samples from 19 wells for CDFA list of pesticides and degradates. The most frequently detected were Simazine, Diuron and Bromacil at maximum concentrations of 0.158, 0.75 and 1.021µg/L, respectively. The most frequently detected degradates were Deisopropyl Atrazine and Deethyl Atrazine at maximum concentrations of 0.732 and 0.05µg/L, respectively. Less frequently detected pesticides and degradates were Atrazine (0.037µg/L), Cyanazine (0.012µg/L), Norflurazon (1.39µg/L), Hexazinone (0.027µg/L), Desmethylnorflurazon (0.323 µg/L), Primodone (0.07 µg/L), Metolachlor (0.077 µg/L), and Diamino Chlorotriazine (0.099 µg/L).
San Diego County	Domestic Well	Pesticides, Herbicides, and Degradates	Under the GAMA-Domestic Well Project conducted during April –June 2008. One hundred thirty seven wells were sampled, and 39 samples were analyzed for pesticide. No pesticides were detected in any of the samples collected.

Regional Water Boards

The information below summarizes, by county, the monitoring, assessment, cleanup, and other actions taken by the nine RWQCBs to address point sources of contamination for pesticides.

Region 1–Regional Water Quality Control Board, North Coast

Table 8. Actions taken by the Regional Water Quality Control Board, North Coast (Region 1), in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Humboldt	U.S. Forest Service Nursery, McKinleyville	Chlorothalonil	USFS monitoring and assessment to prevent discharges to surface water and ground water with RWQCB support.
	Sierra Pacific, Arcata	Pentachlorophenol, Tetrachlorophenol,	Ongoing contamination assessment and cleanup.
	Carlotta Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Beaver Lumber Company, Arcata	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Sun Valley Bulb Farms	Chlorothalonil, Dithiocarbamate	Ongoing monitoring and assessment to prevent discharges to surface water and ground water under RWQCB direction.
	Pacific Lumber Co., Carlotta	Pentachlorophenol. Tetrachlorophenol	Ongoing contamination assessment to prevent discharges to surface water
	Schmidbauer, Arcata	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Schmidbauer, Eureka	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Simpson Plywood Mill (Old), Eureka	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Simpson Mill, Samoa	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
Siskiyou	Hi-Ridge Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Pine Mountain Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Morgan Door, Roseburg	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	J.H. Baxter	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.

Region 2–Regional Water Quality Control Board, San Francisco Bay

Table 9. Actions taken by the Regional Water Quality Control Board, San Francisco Bay (Region 2) in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Alameda	AmChem/ Henkel Surface Technologies n/c in08	Chlordane, Heptachlor	RWQCB oversight. Impacted soil removed in 2006 and 2007. Groundwater no longer impacted, but may require long-term monitoring after removal of cap/redevelopment.
	Jones-Hamilton	Pentachlorophenol (PCP), Tetrachlorophenol (TCP)	RWQCB Final Site Cleanup Requirements Order No. 2001-0054 adopted specified time schedule for final remedial actions. Ongoing groundwater monitoring for VOCs, PCP & TCP.
	Port of Oakland (Embarcadero Cove)	Chlordane, Pentachlorophenol, DDT, Endosulfan, 2,3,7,8-TCDD, DDD	Department of Toxic Substances Control (DTSC) has lead and has approved a Remedial Action Plan including continuous ground water monitoring.
	Peerless Southern Pacific Railroad	Pentachlorophenol	City of Berkeley Health Department has lead. Additional soil and ground water investigations required.
	FMC, Newark	EDB	RWQCB Final Site Cleanup Requirements Order No. 2002-0060 adopted. Ongoing groundwater monitoring for VOCs, specified time schedule for final cleanup actions. Ground water cleanup underway.
Contra Costa	Chevron	Endrin, Lindane, Dieldrin, DDT, Arsenic	Submitted closure plan for Class I impoundment. A cut-off wall with a ground water extraction trench around the impoundment has been constructed.
	Levin Metals	Aldrin, 4,4'-DDD, 4,4'-DDE, o,p,-DDT, Dieldrin, BHC	U.S. Environmental Protection Agency (U.S. EPA) lead on-site cleanup. Awaiting report of completion for remedial dredging project.
	FMC, Richmond	DDT, DDD, DDE, Dieldrin, Chlordane, Tedion, Endosulfan, Ethion, Carbophenothion, Heptachlor	California Department of Public Health (DPH) lead on-site cleanup. Cleanup completed. Monitor to assure remaining pollutants do not migrate.
Marin	Former Sonoma Mosquito Abatement District, San Rafael	DDD, DDE, DDT, Dieldrin	DTSC is lead agency. Some soil removal has already taken place (approximately 3000 yd^3 in 1992). Old monitoring wells destroyed. Seven new wells were installed in 1996. DTSC has mailed out draft deed restriction and draft O&M Agreement for site.
Solano	Travis Air Force Base	Aldrin, Heptachlor, Alpha-Chlordane, Heptachlor Epoxide	U.S. EPA leads site cleanup. Groundwater extraction, treatment and monitoring have been ongoing since 2001.

Region 3–Regional Water Quality Control Board, Central Coast

Table 10. Actions taken by the Central Coast Regional Water Quality Control Board (Region 3) in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Monterey	Monterey Soil Service, King City	EDB and DBCP	Monitored natural attenuation is used at the site for low-level residual EDB and DBCP concentrations in groundwater. Groundwater monitoring activities are expected to continue into FY 2009/2010.
Santa Clara	Castle-Veg-Tech, Morgan Hill	Toxaphene, Endrin, Lindane, Endosulfan	The Dischargers are currently out of compliance. The Central Coast Regional Water Quality Control Board will continue enforcement actions to bring the Dischargers into compliance in FY 2009/2010.
Santa Cruz	WFS-Greengro, Watsonville	1,2-DCP	Monitored natural attenuation is used at the site for low level residual 1,2-DCP concentrations in groundwater. Groundwater monitoring activities are expected to continue into FY 2009/2010.

Region 4–Regional Water Quality Control Board, Los Angeles

Table 11. Actions taken by the Regional Water Quality Control Board, Los Angeles (Region 4), in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
No pesticides were detected at any landfill in the Los Angeles Region that is required to submit ground water monitoring reports to the Regional Board.			

Region 5–Regional Water Quality Control Board, Central Valley–Fresno

Table 12. Actions taken by the Regional Water Quality Control Board, Central Valley (Region 5, Fresno), in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Fresno	Blue Hills Disposal Site, County of Fresno	Dicamba, 2,4-D, Silvex	DTSC lead. Corrective action underway.
	Thompson Hayward Agriculture & Nutrition	Alpha-BHC, Beta-BHC, Gamma-BHC, Dieldrin, DBCP, Diphenamid, Heptachlor, Heptachlor Epoxide	DTSC lead. Site has been certified by DTSC and de-listed as a USEPA NPL site. Remedial Action Plan Implemented. Implementation of Operation, Maintenance, and Monitoring Plan and Agreement. Cap completed. Deed restriction imposed.
	J.R. Simplot, Helm Facility	Dieldrin	Long-term groundwater monitoring.
	FMC Corporation, Fresno Facility	1,2,3-TCP, Aldrin, Dieldrin, DDT, DDD, DDE, Heptachlor, Lindane, Toxaphene, Ethyl Parathion, Malathion, Ethion, Endosulfan, Dimethoate, Furadan, Dinitrocresol, Dinoseb (DNBP)	DTSC lead. Discharge area capped and undergoing remediation, using SVE. 1,2,3-TCP in groundwater is driving new off-site extraction well installation, expanding the original two-well extraction system. Groundwater pilot test results show enhanced reductive dechlorination is cost prohibitive – will continue using SVE and pump & treat as primary plume control tool.
	Britz, Inc., Five Points	Toxaphene, DDT, DNBP	State Superfund site (DTSC lead). Deed restriction in place. Natural attenuation. Operation and Maintenance Plan in place.
	Fresno County Wells	DBCP, EDB, 1,2-D	Pesticides detected in 146 wells (AB 1803 sampling).
	Coalinga Airport	DDT, DDE, Ethion, Toxaphene, 2,4-D, Dinoseb, Malathion, Parathion, Merphos	DTSC lead on the site. Pesticides found in soil. Additional assessment proposed and work plan approved.
	Spain Air	Ethion, DEF, Parathion, Trithion, Dinoseb, Paraquat, DDE, DDT, Endosulfan II	Assessment needed.
	CPS (PureGro), Oxalis	1,2-Dichloropropane, 1,2,3-TCP, nitrate	General cleanup workplan submitted. Sampling and microcosm testing for in-situ chem. oxidation & enhanced bioremediation to begin.
	Eagle Field (FUDS)	2,4-D, Pentachlorophenol,	Pesticides detected from groundwater grab samples. Additional assessment is needed.

Region 5 - RWQCB, Central Valley-Fresno - Actions Taken in Fiscal Year 2008-2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Broadview Water District – Bullard Avenue Air Strip	DDT Toxaphene	Pesticides detected from groundwater grab samples. Assessment in progress. Remediation options are being assessed.
	Baptiste Property	DDT Toxaphene	Pesticides detected in soil samples. Pesticide-impacted soil has been excavated and disposed off-site. Closure letter issued 23 December 2008.
	Mike Perez Property	DDT Toxaphene	Pesticides detected from groundwater grab samples. Pesticide-impacted soil has been excavated and disposed off-site. Closure letter in process of being issued.
	Former Unocal - Whitesbridge Rd, Kerman	DDT, Toxaphene and Dieldrin	Initial soil investigation completed. Supplemental Soil Investigation completed.
	Wingate Chemical Co. (Former)	Unknown	Workplan for additional Soil and Groundwater assessment submitted.
Kern	Brown & Bryant, Inc., Arvin	1,2-D, 1,3-D, DBCP, Dinoseb, EDB, carbaryl	Federal Superfund site (DTSC lead). U.S. EPA has prepared Remedial Information Feasibility Study Report.
	Brown and Bryant, Inc., Shafter	DDE, DDT, Dinoseb, VOCs, (DCP, ethylene dibromide)	State Superfund site (DTSC lead). The site has been conducting a supplemental risk assessment since 2005. A Final Remedial Action Plan (Soil Excavation and Soil Vapor Extraction) was submitted in April 2009.
	Western Farm Service, Delano Facility	DDT, Toxaphene, Dinoseb, Dicamba	Assessment on-going, long-term monitoring on-going, impacted soils have been capped. Health Risk performed with regard in developing soil clean up levels for possible excavation. Two additional downgradient monitoring wells installed to assess extent of off-site plume.
	Puregro Company, Bakersfield	DBCP, Toxaphene	DTSC lead. Additional soil sampling completed. Health-Risk assessment currently being drafted. Remediation Feasibility Study Report due early 2010.
	Dick Garriott Crop Dusting, Bakersfield	Chlordane, DDE, DDT, PCNB, Endosulfan I & II, Methoxychlor, Carbofuran, Carbaryl, Bufencarb, DEF, Tedion, Diazinon, Chlorpyrifos, Ethyl Parathion, Diuron, Dinoseb, Dicamba	CAO issued in 1993. Hydrogeological Assessment Report completed in 1993. Additional groundwater monitoring well proposed. Title 27 cap proposed.

Region 5 - RWQCB, Central Valley-Fresno - Actions Taken in Fiscal Year 2008-2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	USDA, Shafter	Dichlobenil, EPTC, Prometryne, DDT, DDE, DDD, Dieldrin, Toxaphene, Silvex, PCP, Chlorpropham, Ametryn, Atrazine	USEPA lead. Developing a closure plan. Soil remediation and dry well abandonment were requested in 1996 but have not been completed.
	Kern County Wells	DBCP, 1,2-D, EDB	Pesticides detected in 57 wells (AB 1803 sampling). No assessment underway.
Kings	Lemoore N.A.S.	Unspecified	Investigation ongoing.
	Blair Field	2,4-D, Dicofol, Diazinon, Propargite	Assessment needed.
	Blair Aviation	Trifluralin, Mevinphos, Phorate	Contamination assessment needed.
	Lakeland Dusters	DDT, Toxaphene	Contaminated soils excavated and stockpiled on site. Remediation underway.
Madera	Chowchilla Municipal Airport	Dieldrin, Alpha-BHC, Endosulfan, PCNB, DDT, DDE, Lindane	Contamination assessment needed.
	Madera Municipal Airport	DDT, DDE, Toxaphene, Dicofol, Endrin	Impacted soils have been capped. Long-term monitoring on going.
	Western Farm Service, Inc., Madera Facility	Dinoseb, DBCP, Dieldrin	Impoundment closed. Impacted soils have been capped. Long-term monitoring on going.
	Madera County Wells	DBCP	DBCP detected in two wells (AB 1803 sampling). No assessment underway.
Tulare	Crop Prod. Services - Cutler	Unknown	Workplan for additional soil and groundwater assessment approved. Field work to begin shortly.
	Mefford Field, City of Tulare	p,p'-DDT, p,p'-DDE, 2,4,5-TCP, Dicamba, DNBP, Diuron	Contamination assessment and mitigation reports needed.
	Tulare Airport	2,4-D, DNBP	Assessment needed.
	Kaweah Crop Dusters	DDT, 2,4-D, 2,4,5-T, Methoxychlor	DHS Remedial Action Order issued January 1984. Cleanup ongoing.
	Tulare County Wells	1,2-D	Detected in wells through AB 1803 sampling. No assessment underway.

Region 5–Regional Water Quality Control Board, Central Valley–Redding

Table 13. Actions taken by the Regional Water Quality Control Board, Central Valley (Region 5, Redding), in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Butte	L.P, Remanufacturing Facility, Chico	Pentachlorophenol Tetrachlorophenol	DTSC is lead agency. The approved Final Remedial Action Plan included, in part, extracting pentachlorophenol-contaminated groundwater from four extraction wells, treating the water using granular activated carbon, and reinjecting the treated water to a dry well. Groundwater cleanup completed in 2003. Treatment system dismantled, dry well destroyed, and Waste Discharge Requirements rescinded in March 2008. Land use restricted. Groundwater monitoring continues.
Shasta	Former Branstetter Mill Site, Redding	Pentachlorophenol	Pesticides associated with former dip tank. Residential development planned. Initial investigation identified potential human health concerns. In February 2008, case referred to DTSC who has entered into a voluntary cleanup agreement with RP, further assessment planned.
Tehama	Louisiana-Pacific, Former VG Mill & Jamb, Red Bluff	Pentachlorophenol Tetrachlorophenol Stoddard Solvent	CAO Order 98-712. On-going groundwater monitoring and assessment. Groundwater remediation by extraction, carbon filtration, and re-injection proposed to reduce pollutant source and promote biodegradation.

Region 5–Regional Water Quality Control Board, Central Valley–Sacramento

Table 14. Actions taken by the Regional Water Quality Control Board, Central Valley (Region 5, Sacramento), in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Merced	Merced Municipal Airport	Alachlor, Captan, Carbophenothion (trithion), DDT (total) Dicofol (Kethane), Dieldrin, Endosulfan I, II, Endosulfan sulfate, Endrin, Endrin aldehyde, Endrin ketone, Heptachlor epoxide, Methoxychlor, Toxaphene.	Health Assessment completed. Feasibility study submitted. Groundwater treatment using HRC underway.
	J.R. Simplot, Winton	1,2-DCP, 1,2,3-TCP	Organo-chlorine contaminated soil excavated; soil vapor extraction removed some volatile compounds. Pilot studies using HRC and groundwater extraction/treatment system using methanol is being conducted in 2007 and 2008 to treat VOCs.
	Western Farm Service, Merced	1,2-DCP, DBCP, dinoseb	Organo-chlorine contaminated soils were removed. A pilot study for in-situ remediation of groundwater using Hydrogen Releasing Compound (HRC) was effective at removing constituents of concern. A feasibility study is being developed for full-scale remediation.
Sacramento	Sacramento Army Depot	Diazinon, Dursban	Assessment report requested. Federal Superfund work in progress. Cleanup of pesticides completed.
	Western Farm Service, Walnut Grove	Aldrin, beta-BHC, gamma-BHC, DDD, DDE, dieldrin, heptachlor epoxide, endosulfan, Disulfoton, 1,2-DCP	Investigation continuing. Pesticides are associated with a drainage collection area.
San Joaquin	Occidental Chemical, Lathrop	EDB, DBCP, Sulfolane	Groundwater cleanup underway pursuant to stipulation and judgment approving settlement (1981). Currently implementing groundwater treatment system optimization, monitoring and reporting program.
	Continental Grain Company	Carbon Tetrachloride, chloroform, 1,2-DCP, 1,2-DCA, tetrachloroethane	A pilot study evaluating zero-valent iron for in-situ treatment of groundwater was successful. Groundwater recirculation is underway to accelerate treatment.

Region 5 - RWQCB, Central Valley-Sacramento - Actions Taken in FY 2008-2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	John Taylor Fertilizers, Stockton	Dinoseb, 1,2,3-TCP, 1,2-DCP, bromacil	Soil investigation did not identify on-site source areas for these groundwater contaminants. Investigation underway
	Defense Depot, Tracy	Dieldrin	A Record of Decision (ROD) was finalized in February 1998; it includes soil cleanup levels for simazine and dieldrin, and a ground water cleanup level for dieldrin. Pump and treat has been implemented for main dieldrin plume. Currently, negotiating response to dieldrin plume in NW corner of Depot that requires remedial actions. Two pumping tests were completed in October 2008.
	Port of Stockton, Rough & Ready Island	DDD, DDE, DDT, Heptachlor Epoxide, alachlor	Assessment ongoing. Soil removal actions have occurred and more are planned. Groundwater assessment underway.
	Western Farm Service, Stockton (former Pure Gro/Brea)	1,2-DCP, Dinoseb	Some soil was removed; two source soil areas are capped. Semi-annual groundwater monitoring and long-term cap maintenance is continuing. Health risk assessment is complete. A pilot study evaluating zero-valent iron for in-situ groundwater treatment is underway since 2006.
	Former Oxychem/ Simplot/ PureGro, Stockton	1,2-DCP, Dinoseb, Chlorobenzene, 1,1,2-DCA, 2,4,5-TP, Atrazine, bromacil, tebuthiuron, simazine, DBCP, 1,2,3-TCP	Primary soil source area remediated with thermal destruction. Phytoremediation in progress to treat trace constituents in soil and remove contaminants from groundwater
	Cal Farm Supply	b-BHC	Soils were remediated. Groundwater monitoring will determine if b-BHC remains in groundwater.
	Western Farm Service, Vernalis	DBCP, EDB, diuron, 1,2-DCP	Pilot project using hydrogen release compound for in-situ remediation successful and expanded in 2007.
Solano	John Taylor Fertilizer, Dixon	DDT, tebuthiuron	Investigation underway
	TSI, Dixon	DDT, DDE, 1,2-DCP, 1,2,3-TCP, endrin, endosulfan, methoxychlor, toxaphene, trifluralin	Some contaminated soil was removed. VOCs are being removed from the soil column with soil vapor extraction.
Stanislaus	Chemurgic Agricultural Chemicals	BHC	Excavation of areas with elevated BHC in soil completed by December 1995. Groundwater remediation by extraction and carbon filtration with monitoring ongoing.
	Geer Road Landfill	1,1-DCA, 1,1,1-TCA, TCE, Chloridazon, Freons	Ground water cleanup underway.
	Western Farm Service, Modesto	DBCP, EDB, 1,2-DCP, chlorpyrifos, DDT, disulfoton, 2,4,5-TP	Remedial work to excavate areas with elevated pollutant concentrations in soil completed. An engineered cap has been installed over a majority of the site.

Region 5 - RWQCB, Central Valley-Sacramento - Actions Taken in FY 2008-2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Shell Agricultural Research Facility	Chloroform	Groundwater being treated with carbon absorption for organic compounds. Soil has been remediated. Chloroform remains.
Sutter	Bowles Flying Service	2,4-D, Thiobencarb, Diuron, Metalaxyl, Molinate, Simazine	Cease and Desist Order issued under the TPCA program. On DTSC's list as needing a Preliminary Endangerment Assessment. Monitoring wells installed.
	PureGro, Robbins	Alachlor, aldrin, dicofol, monuron, diphenamid, 1,2-DCA, 1,2-DCP	MRP issued for quarterly ground water monitoring. Trees were planted on the site to phytoremediate the groundwater. Results are inconclusive at this point
	John Taylor Fertilizers, Yuba City	1,2,3-TCP	Soil excavation completed, in-situ groundwater remediation using hydrogen-releasing compound is removing VOCs.
Yolo	Frontier Fertilizer Company, Davis	EDB, DCP, DBCP, Carbon tetrachloride	DTSC is lead agency. Thermal treatment of VOCs in vadose zone is selected remedy, with continuation of groundwater pump and treat.
	J.R. Simplot, Courtland	1,2,3-TCP	Phytoremediation underway for soil & groundwater remediation.

Region 6–Regional Water Quality Control Board, Lahontan

Table 15. Actions taken by the Regional Water Quality Control Board, Lahontan (Region 6), in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Inyo	Amargosa River at Upper Canyon	Triclopyr	In March 2004, two surface water samples collected from the Amargosa River and analyzed as part of the Region's ambient water quality monitoring program showed triclopyr at concentrations of 0.06 and 0.07µg/L. The data was considered in the Regional Board's Clean Water Act section 303(d)/305(b) water quality assessment process. If triclopyr is again detected, Regional Board staff will investigate possible sources.
San Bernardino	George Air Force Base	Dieldrin	A number of groundwater monitoring wells in the vicinity of the Westwinds Golf Course test positive with low levels of dieldrin. Some wells are above the CA State Department of Health Services Notification Level for dieldrin. The Air Force conducted further site assessment, including surface soil sampling to evaluate potential sources and installation of groundwater monitoring wells to define the lateral extent of dieldrin in groundwater. Groundwater monitoring continues to evaluate concentration trends. The Air Force is completing an updated ground water model to assess the probability of movement of dieldrin in groundwater. This site is adjacent to large municipal supply wells for the City of Adelanto. To date, those wells have not been found to contain dieldrin.
	China Lake Naval Weapons Center	4,4' DDD 4,4' DDE 4,4' DDT Dieldrin Chlordane	Sites 31 and 32 Pesticide Storage area and Golf Course Pesticide Handling area at China Lake contained pesticides in soil and low concentrations in ground water. Area was cleaned up; contaminated soil source was removed and disposed appropriately. Ground water is monitored, and is not used for drinking water in the area east of China Lake Playa.

Region 6 - RWQCB, Lahontan - Actions Taken in FY 2008-2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Placer	Resort at Squaw Creek Golf Course	Clopyralid	The Resort at Squaw Creek Golf Course proposed use of clopyralid for clover control. The golf course is under Waste Discharge Requirements (WDRs), which allow only for conditional use of chemicals, including herbicides, which are approved by the Regional Board. May 2009, the WDRs were updated to increase groundwater monitoring from quarterly to monthly during golf course operation. More wells are being monitored with a focus on detection of nutrients and pesticides in the shallow aquifer prior to affecting any potential municipal supplies located nearby. Currently the golf course in not applying any pesticides but could in the future. An updated chemical application and management plan is required by December 2009.
All counties in Region 6 (includes all or parts of Modoc, Lassen, Plumas, Sierra, Nevada, Placer, El Dorado, Alpine, Mono, Inyo, San Bernardino, Kern, Los Angeles Counties)	Region wide	Herbicides	To qualify for the waiver under the Timber Harvest Activities Waiver Policy (revised waiver adopted by the Regional Board in May 2009), applicants must notify the Regional Board at least 90 days in advance of any proposed herbicide application, and provide specific information about the proposed herbicide use. They must also adhere to any monitoring program prescribed by the Executive Officer.

Region 7–Regional Water Quality Control Board, Colorado River Basin

Table 16. Actions taken by the Regional Water Quality Control Board, Colorado River Basin (Region 7), in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Imperial	Central Brave Agricultural Service	4,4'-DDE, Endosulfan	Recalcitrant Discharger. Referred to Attorney General for nonpayment of fees.
	J.R. Simplot Company, Sandin Siding Facility	Dieldrin, 4,4'-DDT, Endrin	CAO issued. Site in remediation. Risk base corrective action in-progress (site closed in 2001)
Riverside	West Coast Flying	Endosulfan I & II, Disulfoton	Recalcitrant discharger. Referred to Attorney General for nonpayment of fees.
	Woten Aviation Services	Disyston, DEF, Ethyl Parathion, Methyl Parathion	CAO issued. U.S. EPA has lead in cleanup.
	Foster Gardner, Inc., Coachella Facility	1,2-Dichloroethane, 1,2-D, Ethylene Dibromide	CAO issued October 1991 by RWQCB. Imminent and Substantial Endangerment Order issued by DTSC on August 21, 1992. Cleanup on going. DTSC has lead in cleanup.
	Coachella Valley Mosquito Abatement District	DDT, DDE, DDD	A deed restriction for the site was recorded in the Official Records for Riverside County on June, 11 2009. The case was closed on July 15, 2009.
	Crop Production Services, Blythe (Formerly Pure Gro MW-24)	1,2-Dichloropropane	Remedial Action Plan was accepted on July 15, 2009. Installation of a remediation system is scheduled to begin during the 3rd and 4th quarters of 2009. The remediation system should begin operation in the 4th quarter of 2009.

Region 8–Regional Water Quality Control Board, Santa Ana

Table 17. Actions taken by the Regional Water Quality Control Board, Santa Ana (Region 8), in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Orange	Great Lakes Chemical Corporation (formerly Great Western Savings), Irvine	1,2-D, EDB, 1,2-DCE	On-site full-scale multi-phase vacuum extraction system is continuing. GLCC now discharges to County Sanitation District of Orange County under Special Purpose Discharge Permit as of 12/2001. GLCC was issued a CAO by RWQCB on 4/17/97 for off-site remediation of impacted groundwater. GLCC is operating an on-and off-site groundwater extraction and treatment system. The full treatment system has been operating continuously since December 2001. Waste Discharge Requirements (Order No. 0025) was rescinded in April 2002. Treated groundwater is discharged to sewer line.
Riverside	Sunnymead Mutual Water Company (North and South Well)	DBCP	Both wells were sold to Eastern Municipal Water District in February 1991. Customers are being served by the new District from other supply sources. North Well has been completely rehabilitated. South Well will be used for emergency purposes only.
	Arlington Basin	DBCP	Construction of a 7-MGD reverse osmosis plant with partial flow through a GAC unit for treatment of TDS, NO_3 and DBCP was completed in September 1990. About 1.0 MGD of groundwater is treated and 0.5 MGD is bypassed. Treated water is mixed with the bypassed water and discharged to the Arlington Channel for ground water recharge purposes by the Orange County Water District. Salt brine (0.2 MGD) is discharged to the Santa Ana Regional Interceptor, which discharges to the ocean via the Orange County Sanitation District. A second parallel transmission line has been completed to bring extracted groundwater from three wells to the reverse osmosis unit. Sale of this water to Cities of Norco and Jurupa Community Services District.
	City of Corona (Well 8, mun.)	Simazine	Well has been completely rehabilitated. Simazine was not detected in the sampling after rehabilitation work. No further action being taken. Trace of TCE has been detected in recent sampling. No further action being taken.
	Home Gardens County Water District (Wells 2 & 3, mun.)	DBCP, Simazine	Water purveyor has closed these wells and is now purchasing water from the City of Riverside.
	City of Riverside, Twin Spring, mun.	DBCP	A 9,000 gpm GAC treatment system has been installed (Palmyrita Treatment Plant)

Region 8 - RWQCB, Santa Ana - Actions Taken in FY 2008-2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	City of Corona (Well 17, mun.)	Simazine, DBCP	Well has been abandoned. A new well (17A) has been drilled and is in use. Trace of DBCP was detected in March 1991 sampling. Trace of TCE has been detected in recent sampling of the new well.
	City of Riverside (Russell "B", mun.)	Simazine, DBCP	Well has been abandoned and replaced with a new well. (Russell "C")
	City of Riverside (Garner "B", mun.)	DBCP	A 3,200 gpm GAC treatment system has been installed (Garner B Treatment Plant)
	City of Riverside (Russell "C", mun)	DBCP	A 3,200 gpm GAC treatment system has been installed (Garner B Treatment Plant)
	City of Riverside (1st Street)	DBCP	Well is not being used due to high concentrations of DBCP. No mitigation measures in effect.
Riverside	City of Riverside (Electric Street, mun.)	DBCP	A 9,000 gpm GAC treatment system has been installed (Palmyrita Treatment Plant)
	City of Riverside (Palmyrita, mun.)	DBCP	A 9,000 gpm GAC treatment system has been installed (Palmyrita Treatment Plant)
	City of Riverside (3 wells, mun.)	DBCP	Water from Hunt Wells No. 6, 10, and 11 is being blended with other wells in the area. No DBCP detection in the past two years.
	City of Riverside (3 wells, emergency, Downtown Riverside)	DBCP	No mitigation measures in effect. These three wells are also contaminated with industrial organic solvents.
	Riverside County Hall Of Records, (pr)	DBCP	No mitigation measures in effect. Volatile organic chemicals such as TCE and PCE have also been found. Well is used for emergency purposes only.
	Loma Linda University, Arlington, (Wells 1 & 2, mun.)	DBCP	The University water supply system is tied into the City of Riverside domestic water supply distribution system. These two wells are used for irrigation purposes at the school.

Region 8 - RWQCB, Santa Ana - Actions Taken in FY 2008-2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	City of Riverside (Moor-Griffith, mun.)	DBCP	A 9,000 gpm GAC treatment system has been installed (Palmyrita Treatment Plant)
	Lake Hemet MWD (Wells A and B, mun.)	DBCP	The District is using well "A" for irrigation purposes. Well "B" is being used by a local farmer for irrigation purposes.
San Bernardino	Victoria Farms MWC (Well 01 & 03, mun.)	DBCP	Water purveyor has closed these wells and is now purchasing water from the City of San Bernardino.
	Gage System Wells (16 wells, mun.) Raub Wells (4 wells, mun.)	DBCP	The City of Riverside and the Gage Canal Company operate the Gage System, which consists of sixteen wells located along the Santa Ana River. These wells are being blended for domestic use. Trace amounts of radon have been detected in some of these wells. The City installed three deep wells in the area to increase blending capacity. Two GAC treatment systems (total of six wells) have been in operation since February 2000 for removal of VOCs and DBCP. Additional GAC system came on line (June 2006) for treatment of groundwater (four Raub wells). These units are located at the leading edge of an existing TCE plume. Raub treated groundwater is pumped into Gage System transmission line.
	Bunker Hill Basin: Crafton/Redlands area (36 wells)	DBCP	The City of Redlands started construction of an 8.5-MGD granular activated carbon (GAC) treatment system in September 1991. This GAC system treats groundwater from two wells. Treated water is being put into the local water supply distribution system. Funding for this system is from the STATE WATER BOARD ($2.8 million) and bond money through the State Expenditure Plan ($1.9 million) that is managed by DTSC. The system has been off line since July 1997 due to presence of perchlorate above Action Level in both production wells. The Department of Health Services is reviewing effectiveness of tailored carbon system for removal of VOCs and perchlorate. Lockheed Martin has provided $3.7 million for the cleanup of groundwater supplies that the City has been conducting since 1985.
	South San Bernardino Company Water District (4 wells, mun.)	DBCP	All four wells are out of service. The City of San Bernardino Water Department purchased the water district in July 1991. The City now supplies all the customers in the area.

Region 8 - RWQCB, Santa Ana - Actions Taken in FY 2008-2009, con't.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
	Cucamonga VWD (15 wells, mun.)	DBCP	Five wells are inactive. Ten wells are active and water is being blended with other supply wells. Water is being purchased from Metropolitan Water District (MWD).
	Monte Vista CWD (3 wells, mun.)	DBCP	One well has been abandoned. Two wells are active and water is being blended with other supply wells. Water is being purchased from MWD.
	City of Upland (13wells)	DBCP	Five wells have been abandoned. Four wells are currently on standby. Four wells are active and water is being blended with other supply wells.
	City of Loma Linda (6 wells, mun.)	DBCP	Two wells have been abandoned. One well is out of operation due to high nitrates. Four new deep wells have been on line since 2002. A GAC treatment system (Richardson) is being built to treat groundwater from two newly installed supply wells (Richardson #5 and Mt. View #6). Mt. View #3 and #5 will be inactive upon completion of treatment system.

Region 9–Regional Water Quality Control Board, San Diego

Table 18. Actions taken by the Regional Water Quality Control Board, San Diego (Region 9), in FY 2008-2009.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
San Diego	City of Oceanside Water Utility District (Well No. 12-11S/ 4W-18L1 S)	1,2-DCP (1,2-Dicloropropane)	This backup drinking water well is located in the San Luis Rey River Valley. Up to 2.3 µg/L has been detected in this well. The City of Oceanside is continuing monitoring of this well and reports to the State's DHS.
	San Diego Naval Station	Maximum Concentrations **Site 1 - Former Ship Repair Basin** 4,4-DDT = 0.11 µg/L Endosulfan II= 0.021 µg/L Heptachlor epoxide = 0.014 µg/L **Site 2 - Mole Pier** Chlorpyrifos = 0.31 µg/L Endrin = 0.011 µg/L Endrin aldehyde = 0.15 µg/L Gamma-chlordane = 0.011 µg/L Methoxychlor = 0.26 µg/L **Site 17 - NEX 32nd Street Service Station** Aldrin = 0.021 µg/L Beta-BHC= 0.018 µg/L Endrin aldehyde = 0.045 µg/L Endrin ketone = 0.021 µg/L Gamma-BHC (lindane) = 0.0069 µg/L Methoxychlor = 0.036 µg/L	Impacts to soil and ground water is managed under Naval Base San Diego, Installation Restoration Program (IRP), pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. sections 9601 et seq., "CERCLA")
	MCB Camp Pendleton	**1111-MW4**=4,4'-DDD at 0.02 µg/L ; **1A1-MW-1**=4,4'DDD at 0.01 µg/L ; **09S/07W-11K01**= dalapon=0.83 µg/L; **23W-07A,B,C** = dalapon=0.43-1.7µg/L; **1111MW-3**= 4,4-DDD=0.03 µg/L; 4,4-DDE=0.08 µg/L; 4,4-DDT=0.04µg/L; **06GWCW1193** = 4,4-DDT=0.74 µg/L; **06GW09A392**= 4,4-DDD=0.52 µg/L	Ground water monitoring activities will be conducted to determine fluctuations of pesticide concentrations with time across the site. Most concentrations detected in ground water to date do not exceed established concentrations that are protective of human health and the environment. Two instances exceed MCLs and they were detected in 1992 and 1993 only. Currently under investigation by DTSC and RWQCB.

REFERENCES

Basinal, L., T. Jacobsen, A. Da Silva, J. Troiano, P. Reising, D. Laird, D. Stubbs, and A. Barefoot. 2007. Demonstration of Effectiveness of Chemigation of Pre-emergence Herbicides Applied through Low Volume Irrigation Systems. Final Report to DPR. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/eh0701.pdf>.

Bergin, R. 2009. Status Report Pesticide Contamination Prevention Act. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/eh0902.pdf>

Bergin, R. and C. Nordmark, 2009. GW 09-GWPL Monitoring Results for Imidacloprid and Four of Its Degradates. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/report_gw09a.pdf>.

Bergin, R. and C. Nordmark, 2009. GW09–Protocol for Ground Water Protection List Monitoring for Metolachlor, S-Metolachlor, and Imidacloprid. Available at: <http://www.cdpr.ca.gov/docs/emon/surfwtr/protocols/studygw09protocol.pdf>

CDPR. 2001. Regulating Pesticides: The California Story, a Guide to Pesticide Regulation in California. Available at: <http://www.cdpr.ca.gov/dprabout.htm>.

CDPR. 2004. Fact Sheet: "A Better Way to Protect Ground Water." Available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/factsheet.pdf>.

CDPR. 2009. Well Inventory Database. California Department of Pesticide Regulation, Sacramento, California.

Clayton, M. 2007. Study 245: Dissipation of simazine and diuron from surface and sub-surface depths in a leaching vulnerable California soil. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol.htm>.

DaSilva, A., 2007a. Study 221-Demonstration Study on Chemigation of Simazine and Diuron on Citrus Orchard in Tulare County. Available at: <http://www.cdpr.ca.gov/docs/emon/surfwtr/caps/study221memo.pdf>.

DaSilva, A. 2007b. Study 241 - Protocol to Demonstrate the Effectiveness of Chemigation of Pre-emergence Herbicides through Low-Volume Micro-Sprinkler Irrigation Systems on a Sandy Soil. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol/241prot.pdf>.

Dias, J. and A. DaSilva. 2008. Preliminary Results for Study 221: Effect of Chemigation Injection Speed on the Efficacy and Leaching of the Pre-Emergence Herbicides Simazine and Diuron. Available at: <http://www.cdpr.ca.gov/docs/emon/surfwtr/caps/studymemo_221.pdf>.

REFERENCES

Garretson, C. 1999. Study 182: Protocol for Monitoring the Concentration of Detected Pesticides in Wells Located in Highly Sensitive Areas. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol.htm..

Garretson, C. 2009. Study 182 / 228–Preliminary Summary of Results for Well Sampling from 1999 through 2009. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/memos.htm>.

Hutson, J.L. and R.J. Wagenet. 1992. LEACHM: Leaching Estimation and Chemistry Model: a process-based model of water and solute movement, transformations, plant uptake and chemical reactions in the unsaturated zone. Continuum Vol. 2, Version 3. Water Resources Inst., Cornell University, Ithaca, New York.

Nordmark, C, Fossen, M. and Marade, J. 2007. Study 240: Protocol for Monitoring Ground Water in Sections with Reported Detections outside Existing Ground Water Protection Areas. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol.htm>.

Pyatt, E. 2009. 2009 Request to Develop Analytical Methods for Azoxystrobin, Chlorothalonil, Dichloran, Iprodione, and Vinclozolin and Significant Degradates in Well Water. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/iprodione_and_other_fungicides.pdf>.

Spurlock, 2000. Effects of Irrigation Scheduling on Movement of Pesticides to Ground Water in Coarse Soils: Monte Carlo Analysis of Simulation Modeling. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/eh0001.pdf>.

Troiano, J. 2003. Study 221 - Protocol to Demonstrate the Effectiveness of Chemigation of Pre-emergence Herbicides through Low-Volume Irrigation Systems. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/protocol/prot221.pdf>.

Troiano, J., and M. Clayton. 2009. Modification of the Probabilistic Modeling Approach to Predict Well Water Concentrations used for Assessing the Risk of Ground Water Contamination by Pesticides. Available at: <http://www.cdpr.ca.gov/docs/emon/pubs/ehapreps/analysis_memos/probabilistic_model.pdf>.

Weaver, D. and C. Nordmark. 2002. Alachlor, Metolachlor And Two Degradates of Each. Available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/rpts/gwpl_0001.pdf>.

Weaver, D. and C. Nordmark. 2004. Imidacloprid and Three of Its Degradates. Available at: <http://www.cdpr.ca.gov/docs/emon/grndwtr/rpts/gwpl_0304.pdf>.

Appendix A–Ground Water Sampling Results through June 30, 2009 Summarized by Reporting Agency

Reporting Agency	*Total Wells Sampled*	*Total Samples Analyzed*
American Environmental Consulting Firm	1	3
California Department Of Public Health	13,652	1,529,819
California Department Of Water Resources	333	20,861
Regional Water Quality Control Board, North Coast (Region 1)	75	1,934
Regional Water Quality Control Board, San Francisco Bay (Region 2)	13	724
Regional Water Quality Control Board, Central Coast (Region 3)	27	794
Regional Water Quality Control Board, Los Angeles (Region 4)	47	865
Regional Water Quality Control Board, Central Valley (Region 5)	56	433
Regional Water Quality Control Board, Lahontan (Region 6)	2	10
Regional Water Quality Control Board, Santa Ana (Region 8)	18	18
Regional Water Quality Control Board, San Diego (Region 9)	2	5
State Water Resources Control Board	182	570
California Water Service Company	7	72
Ciba-Geigy	27	184
City Of Davis	1	6
City Of Oceanside	1	1
City Of San Francisco	11	319
California Department Of Pesticide Regulation	5,361	66,159
Fresno County	2,023	2,080
Glenn County	5	74
Imperial County	1	11
Kern County	336	3,558
Lake County	4	9
Madera County	115	151
Marin County	8	60
Modoc County	4	13
Rhone-Poulenc Ag. Co.	152	1,116
Riverside County	5	50
Sacramento County	130	1,717
San Diego County	8	16
San Luis Obispo County	2	2

Appendix A—Ground Water Sampling Results Summarized by Reporting Agency, con't.

Reporting Agency	*Total Wells Sampled*	*Total Samples Analyzed*
San Mateo County	8	368
Santa Barbara County	4	244
Santa Clara County	718	12,019
Santa Clara Valley Water District	20	576
Solano Irrigation District	10	162
Stockton - East San Joaquin Water Conservation District	49	621
Sutter County	1	4
U. S. Bureau Of Land Management	2	12
U. S. Department Of Agriculture	9	84
U. S. Environmental Protection Agency	6	623
U. S. Forest Service	49	298
U. S. Geological Survey	373	16,017
Yolo County	36	627
Yuba County	47	537

Appendix B–Well Sampling Results Summarized by Pesticide and Reporting Agency

The following table summarizes, by pesticide, the number of counties where wells were sampled, the number of individual wells[a] sampled and the number of individual wells with detections found by CDPH in 2008 and by DPR from June 2008 through July 2009.

Pesticide	Summary		By Reporting Agency	
	Counties Sampled	Wells Sampled	CDPH Detections	DPR Detections
1,2,4-Trichlorobenzene	49	2,729	0	NS
1,2-D + 1,3-D + C-3 compounds	49	2,315	0	NS
1,2-Dichloropropane (propylene dichloride)	49	2,791	9	NS
1,3-Dichloropropene (1,3-D, telone)	43	1,569	2	NS
2,3,7,8-TCDD (dioxin)	20	389	0	NS
2,4,5-T	28	295	0	NS
2,4,5-TP (silvex)	33	711	0	NS
2,4,6-trichlorophenol	2	15	0	NS
2,4-D	33	754	0	NS
2,4-Dinitrophenol	2	15	0	NS
3-Hydroxycarbofuran	33	607	0	NS
4(2,4-DB), dimethylamine salt	16	144	0	NS
Acenaphthene	4	26	0	NS
Acetochlor	7	47	0	NS
Acifluorfen, sodium salt	10	78	0	NS
Acrylonitrile	6	30	0	NS
Alachlor	37	1,204	0	NS
Aldicarb	33	607	0	NS
Aldicarb sulfone	33	607	0	NS
Aldicarb sulfoxide	33	608	0	NS
Aldrin	28	506	0	NS
Ametryne	3	37	0	NS
Atraton	8	13	0	NS
Atrazine	40	1,483	1	2
Bentazon, sodium salt	33	712	0	NS
BHC (other than gamma isomer)	16	97	0	NS
Bromacil	37	1,013	0	21
Butachlor	37	961	0	NS
Butylate	3	37	0	NS
Carbaryl	33	607	0	NS
Carbofuran	33	677	0	NS
Carbon disulfide	22	175	1	NS
Chlordane	30	602	0	NS

Appendix B–Well Sampling Results Summarized by Pesticide and Reporting Agency, con't.

Pesticide	Summary		By Reporting Agency	
	Counties Sampled	Wells Sampled	CDPH Detections	DPR Detections
Chlorobenzilate	2	7	0	NS
Chloroneb	5	44	0	NS
Chlorothalonil	24	190	0	NS
Chlorpropham	5	78	0	NS
Chlorpyrifos	3	37	0	NS
Cyanazine	1	3	0	NS
Cycloate	3	37	0	NS
Dacthal (chlorthal-dimethyl / DCPA)	5	52	2	NS
Dacthal (Chlorthal-dimethyl acid) degradates	18	281	1	NS
Dalapon	33	713	0	NS
DBCP	40	1,821	272	NS
DDD	11	88	0	NS
DDE	11	89	0	NS
DDT	11	88	0	NS
Deethyl-atrazine (DEA)	7	102	NS	14
Deethyl-simazine or deisopropyl-atrazine (ACET)	7	102	NS	60
Desmethylnorflurazon	7	102	NS	32
Diamino-chlorotriazine (DACT)	7	102	NS	58
Diazinon	33	816	0	NS
Dicamba	33	643	0	NS
Dichlorprop, butoxyethanol ester	15	93	0	NS
Dieldrin	28	486	0	NS
Dimethoate	37	926	0	NS
Dinoseb	33	712	0	NS
Diphenamid	5	78	0	NS
Diquat dibromide	29	674	2	NS
Disulfoton	4	31	0	NS
Diuron	18	200	0	31
Endosulfan	11	88	0	NS
Endosulfan sulfate	11	88	0	NS
Endothall	30	582	0	NS
Endrin	30	624	0	NS
Endrin aldehyde	11	88	0	NS
EPTC	7	32	0	NS
Ethion	1	5	0	NS
Ethylene dibromide	39	1,780	8	NS
Fonofos (dyfonate)	2	15	0	NS
Glyphosate, isopropylamine salt	28	547	0	NS
Heptachlor	30	604	0	NS

Appendix B–Well Sampling Results Summarized by Pesticide and Reporting Agency, con't.

Pesticide	Summary		By Reporting Agency	
	Counties Sampled	Wells Sampled	CDPH Detections	DPR Detections
Heptachlor epoxide	30	604	0	NS
Hexachlorobenzene	32	661	0	NS
Hexazinone	7	102	NS	0
Imidacloprid	5	34	NS	0
Imidacloprid guanidine	5	34	NS	0
Imidacloprid olefin	5	34	NS	0
Imidacloprid olefinic-guanidine	5	34	NS	0
Imidacloprid urea	5	34	NS	0
Lindane (gamma-BHC)	29	619	1	NS
Linuron	1	21	0	NS
Malathion	1	57	0	NS
MCPA, dimethylamine salt	4	5	0	NS
MCPP (2-(4-chloro-2-methylphenoxy)propionic acid)	4	5	0	NS
Methiocarb	22	179	0	NS
Methomyl	33	603	0	NS
Methoxychlor	30	632	2	NS
Methyl bromide (bromomethane)	49	2,043	4	NS
Methyl parathion	1	57	0	NS
Metolachlor	37	974	0	NS
Metribuzin	37	974	0	NS
Molinate	40	1,177	0	NS
Naphthalene	47	1,999	0	NS
Napropamide	3	37	0	NS
Norflurazon	7	102	NS	14
Ortho-dichlorobenzene	49	2,791	12	NS
Oxamyl	33	678	0	NS
Paraquat dichloride	8	76	0	NS
Parathion or ethyl parathion	1	57	0	NS
Permethrin	4	19	0	NS
Permethrin, other related compounds	2	7	0	NS
Picloram	32	707	0	NS
Prometon	19	253	0	1
Prometryn	29	313	0	NS
Propachlor	37	932	0	NS
Propazine	3	37	0	NS
Propoxur	22	170	0	NS
Secbumeton	8	13	0	NS
Simazine	39	1,487	1	41
Simetryn	3	37	0	NS
Tebuthiuron	7	102	NS	0

Appendix B–Well Sampling Results Summarized by Pesticide and Reporting Agency, con't.

Pesticide	Summary		By Reporting Agency	
	Counties Sampled	Wells Sampled	CDPH Detections	DPR Detections
Tebuthiuron degradate 104 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea)	5	34	NS	0
Tebuthiuron degradate 106 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea)	5	34	NS	0
Tebuthiuron degradate 107 (2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole)	5	34	NS	0
Tebuthiuron degradate 108 (2-Dimethylethyl-5-amino-1,3,4-thiadiazole)	5	34	NS	0
Terbacil	13	100	0	NS
Terbutryn	10	25	0	NS
Thiobencarb	42	1,210	1	NS
Toxaphene	30	601	0	NS
Triadimefon	3	37	0	NS
Trifluralin	21	183	0	NS
Vernolate	3	37	0	NS
Xylene	49	2,781	5	NS

(a) Some of the wells counted in this table were sampled more than once during the reporting period. For the purposes of this table, a well is only counted once regardless of the number of samples taken.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits

The following table provides updated information, as of June 30, 2009, of all reported pesticide detections in ground water. It includes the historical and current ranges of residue concentrations for all pesticides and degradation products detected. If the pesticide or degradation product was not detected during the most current reporting period, a dash is shown in the column. The "Drinking Water Quality Standards" include regulatory and advisory standards established by CDPH (ANL, DLR, MCL, and NL); OEHHA (PHG); and the U.S. EPA (Lifetime HAL, MCL, and MCLG). Most standards were obtained through CDPH and the U.S EPA however, the U.S EPA Lifetime HAL was obtained through the Pesticide Action Network.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
(S)-Metolachlor	11/2 counties 94/2 wells	0.036 -0.1	- - -	- - -	Selective herbicide. AR[b]. Detections reported by USGS were not verified in subsequent DPR sampling. This chemical has replaced metolachlor in California.
1,2,4-Trichlorobenzene	58/3 counties 8262/5 wells	0.53 -21	- - -	CDPH MCL – 5 OEHHA PHG – 5 USEPA MCL – 70 USEPA MCLG - 70 USEPA HAL – 70.0	Herbicide. NR.
1,2-D + 1,3-D + C-3 compounds	57/2 counties 7794/2 wells	0.67 -1.2	- - -	See 1,2-D and 1,3-D limits below	Fumigant. NR. Regulations were adopted in 1985 that prohibit the use or sale of pesticides in California in which 1,2-D exceeds 0.5% of the total formulation.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
1,2-Dichloropropane (propylene dichloride)	58/24 counties 12341/177 wells	0.1 -160	0.22 - 3.8	CDPH MCL – 5 OEHHA PHG - 0.5 USEPA MCL – 5 USEPA MCLG - 0	Fumigant. NR. Source of residues were determined by DPR to be due to historical non-point source, legal, agricultural use. Regulations were adopted in 1985 that prohibit the use or sale of pesticides in California in which 1,2-D exceeds 0.5% of the total formulation.
1,3-Dichloropropene (1,3-D, telone)	56/4 counties 10043/8 wells	0.64 -1.9	0.64 - 0.66	CDPH MCL - 0.5 OEHHA PHG - 0.2	Fumigant. AR.
2,3,7,8-TCDD (dioxin)	36/1 counties 1777/1 wells	13.42 -13.42	- - -	CDPH MCL 0.00003 OEHHA PHG – 0.000001 USEPA MCL – 0.00003 USEPA MCLG -0	Contaminant and manufacturing byproduct of some pesticides. The 13.42 ppb report was determined to be an error. No dioxin was actually found.
2,4,5-T	46/2 counties 2064/2 wells	0.02 -0.21	- - -	USEPA HAL – 70.0	Herbicide. NR.
2,4,5-TP (silvex)	58/3 counties 6481/4 wells	0.15 -1.4	- - -	CDPH MCL – 50 OEHHA PHG – 25 USEPA HAL – 50 USEPA MCL – 50 USEPA MCLG - 50	Herbicide. NR.
2,4-D	58/12 counties 7170/17 wells	0.3 -46	- - -	CDPH MCL – 70 OEHHA PHG – 20 USEPA MCL – 70 USEPA MCLG - 70	Selective herbicide. AR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
2,4-DP, isooctyl ester	9/2 counties 106/3 wells	0.01 -0.06	- - -	- - -	Selective herbicide. AR.
2-Hydroxycyclohexyl hexazinone	8/1 counties 69/1 wells	0.126 -0.126	- - -	- - -	Breakdown product of hexazinone.
Acenaphthene	25/1 counties 823/25 wells	98 -117	- - -	- - -	Fungicide. NR.
Alachlor	55/5 counties 7868/5 wells	0.1 -9	- - -	CDPH MCL - 2 OEHHA PHG – 4 USEPA MCL – 2 USEPA MCLG - 0	Selective herbicide. NR.
Alachlor ESA	10/5 counties 101/19 wells	0.05 -1.38	- - -	- - -	Breakdown product of alachlor. Alachlor is AR. DPR determined that contamination of ground water occurred from non-point source pesticide applications. DEG[f]
Alachlor OXA	10/1 counties 101/1 wells	0.05 -0.051	- - -	- - -	Breakdown product of alachlor. Alachlor is AR. DEG
Aldicarb	55/2 counties 5901/4 wells	1.1 -7.2	- - -	CDPH ANL - 7 USEPA HAL– 7	Systemic insecticide. AR.
Aldicarb sulfone (Aldoxycarb)	51/6 counties 4714/61 wells	0.05 -1281	- - -	USEPA HAL – 7	Breakdown product of aldicarb. Aldicarb is AR. This compound has contaminated ground water due to LAU of aldicarb.
Aldicarb sulfoxide	51/5 counties 4721/25 wells	0.06 -13.2	- - -	USEPA HAL - 7	Breakdown product of aldicarb. Aldicarb is AR. This compound has contaminated ground water due to LAU of aldicarb.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Aldicarb total (parent and breakdown products)	10/2 counties 110/33 wells	0.13 -49	- - -	See aldicarb and individual breakdown products above	Combined reporting of aldicarb parent and breakdown products reported by some agencies. Aldicarb is AR. This compound has contaminated ground water due to LAU of aldicarb.
Aldrin	54/2 counties 5523/24 wells	21 -107	- - -	CDPH ANL - 0.002	Insecticide. NR.
Atrazine	57/25 counties 12593/317 wells	0.001 -8.5	0.055 - 0.46	CDPH MCL – 1 OEHHA PHG - 0.15 USEPA MCL – 3 USEPA MCLG - 3	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Azinphos-methyl (Guthion)	43/1 counties 1292/1 wells	0.014 -0.014	- - -	- - -	Insecticide. AR.
Benomyl	38/2 counties 1090/2 wells	190 -500	- - -	- - -	Systemic fungicide. AR.
Bentazon, sodium salt	55/17 counties 5721/113 wells	0.02 -20	- - -	- - -	Selective herbicide. AR
BHC (other than gamma isomer)	48/1 counties 2184/1 wells	0.08 -0.08	- - -	- - -	Insecticide. NR.
Bromacil	56/20 counties 10384/265 wells	0.025 -23	0.052 - 4.49	USEPA HAL – 70	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Butachlor	52/2 counties 5550/2 wells	0.39 -0.43	- - -	- - -	Selective herbicide. NR.
Captan	38/2 counties 1470/3 wells	0.1 -0.5	- - -	CDPH ANL - 15	Fungicide. AR.
Carbaryl	53/4 counties 5883/4 wells	2 -55	- - -	CDPH ANL – 700,	Insecticide. AR.
Carbofuran	54/4 counties 6478/5 wells	0.016 -0.686	- - -	CDPH MCL – 18 OEHHA PHG – 1.7 USEPA MCL – 40 USEPA MCLG -40	Insecticide. AR.
Carbon disulfide	40/6 counties 855/14 wells	0.2 -5	1.5	CDPH NL – 160	Fumigant. NR.
Chlordane	56/1 counties 6794/1 wells	20 -20	- - -	CDPH MCL - 0.1 OEHHA PHG - 0.03 USEPA MCL - 2 USEPA MCLG - 0	Insecticide. NR.
Chlorothalonil	51/1 counties 4413/1 wells	0.8 -1.1	- - -	- - -	Fungicide. AR.
Chlorpyrifos	38/2 counties 1441/3 wells	0.02 -0.06	- - -	USEPA HAL - 2	Insecticide. AR.
Coumaphos	11/1 counties 132/1 wells	1 -1	- - -	- - -	Insecticide. AR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Dacthal (chlorthal-dimethyl / DCPA)	33/6 counties 1562/11 wells	0.03 -300	0.1 - 0.14	USEPA HAL - 70.0	Selective herbicide. AR.
Dacthal degradates (chlorthal-dimethyl acid degradates)	59/19 counties 1866/96 wells	0.03 -30	18.3	- - -	Breakdown product of chlorthal-dimethyl. DPR determined that this compound contaminated ground water due to non-point source applications of the parent, chlorthal-dimethyl. DEG
Dalapon	50/1 counties 5030/5 wells	1 -17	- - -	CDPH MCL - 200 OEHHA PHG – 790 USEPA HAL – 200 USEPA MCL – 200 USEPA MCLG - 200	Selective herbicide. NR.
DBCP (1,2-Dibromo-3-chloropropane)	56/25 counties 12545/3095 wells	0.001 -8000	0.01 - 2.2	CDPH MCL - 0.2 OEHHA PHG - 0.0017 USEPA MCL - 0.2 USEPA MCLG - 0	Soil fumigant. NR. Source of residues considered by DPR to be from historical non-point source, LAU. Detections referred to SWRCB.
DDD	42/1 counties 1907/1 wells	1.04 -1.04	- - -	- - -	Insecticide. NR.
DDE	44/3 counties 3411/6 wells	0.01 -0.09	- - -	- - -	Breakdown product of DDT.
DDT	42/3 counties 2117/4 wells	0.02 -0.12	- - -	- - -	Insecticide. NR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Deethyl-atrazine (DEA)	37/19 counties 1518/120 wells	0.001 -2	0.055 - 0.537	- - -	Breakdown product of atrazine. This compound has contaminated ground water due to LAU of atrazine. It is considered as toxic as atrazine and detections of DEA have been used to regulate the use of atrazine. Detections were determined to be LAU.
Deethyl-simazine or deisopropyl-atrazine (ACET)	36/17 counties 1473/412 wells	0.023 -6	0.053 - 1.33	- - -	Breakdown product of atrazine and simazine. This compound has contaminated ground water due to legal agricultural use (LAU) of atrazine or simazine. It is considered as toxic as atrazine and simazine and detections of ACET have been used to regulate the use of both parent compounds. Detections were due to LAU[e].
Demeton	46/1 counties 1774/1 wells	1 -1	- - -	- - -	Systemic-insecticide. NR.
Desmethylnorflurazon (DSMN)	24/8 counties 483/65 wells	0.05 -1.86	0.05 - 0.803	- - -	Breakdown product of norflurazon, which is AR. DPR assumes that this compound contaminated ground water due to nonpoint source applications of the parent, norflurazon and therefore detections are the result of LAU.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Diaminochlorotriazine (DACT)	31/11 counties 897/257 wells	0.05 -7.158	0.05 - 4.98	- - -	Breakdown product of atrazine and simazine. This compound has contaminated ground water due to LAU of atrazine or simazine. It is considered as toxic as atrazine and simazine and detections of DACT have been used to regulate the use of both compounds.
Diazinon	56/8 counties 7231/10 wells	0.01 -507	- - -	CDPH ANL - 6 USEPA HAL– 1	Insecticide. AR. Investigation by DPR found the detection to be due to a transcription error.
Dicamba	52/5 counties 4845/7 wells	0.01 -0.5	- - -	USEPA HAL– 4,000	Selective herbicide. AR.
Dichlorprop, butoxyethanol ester	32/3 counties 499/3 wells	0.1 -6.8	- - -	- - -	Hormone-systemic type herbicide. NR.
Dicloprop	3/1 counties 49/1 wells	6.8 -6.8	- - -	- - -	Hormone-systemic type herbicide. NR.
Dieldrin	56/5 counties 5575/6 wells	0.05 -7	- - -	CDPH ANL - 0.002	Insecticide. NR.
Dimethoate	54/3 counties 6695/3 wells	0.38 -10	- - -	CDPH ANL – 1,	Insecticide. AR.
Dinoseb	50/1 counties 6050/1 wells	30 -30	- - -	CDPH MCL - 7 OEHHA PHG – 14 USEPA MCL – 7 USEPA MCLG - 7	Herbicide, desiccant. AR

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Diquat dibromide	47/7 counties 4685/11 wells	0.67 -549.1	1.3	- - -	Selective herbicide. AR.
Diuron	54/22 counties 8103/510 wells	0.015 -5.2	0.05 - 0.498	- - -	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections reported this year were determined to be due to LAU.
Endosulfan	49/4 counties 2870/10 wells	0.01 -34.7	- - -	- - -	Insecticide. AR.
Endosulfan sulfate	48/2 counties 2224/3 wells	0.15 -0.48	- - -	- - -	Breakdown product of endosulfan. Endosulfan is AR.
Endothall	49/2 counties 4149/3 wells	100 -548.1	- - -	CDPH MCL - 100 OEHHA PHG – 580 USEPA HAL – 50.0 USEPA MCL – 100 USEPA MCLG - 100	Selective herbicide. NR. Early 1989 detections were not confirmed by DPR monitoring. Inactive in 1992.
Endrin	58/4 counties 7122/5 wells	0.03 -2	- - -	CDPH MCL - 2 OEHHA PHG – 1.8 USEPA HAL – 50.0 USEPA MCL – 2 USEPA MCLG - 2	Insecticide. NR.
EPTC (S-Ethyl dipropylthiocarbamate)	40/1 counties 2292/1 wells	5.6 -170	- - -	- - -	Selective herbicide. AR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Ethylene dibromide (1,2-Dibromoethane (EDB))	56/20 counties 8567/184 wells	0.006 -4.7	0.02 - 0.42	CDPH MCL - 0.05 OEHHA PHG - 0.01 USEPA MCL - 0.05 USEPA MCLG - 0	Fumigant, insecticide, nematocide. NR since January 1987. Source of residues considered by DPR to be from historical non-point source, LAU. Referred to SWRCB.
Ethylene dichloride (1,2-Dichloroethane (1,2-DCA))	11/1 counties 197/1 wells	2.9 -2.9	- - -	CDPH MCL - 0.5 OEHHA PHG - 0.4 USEPA MCL – 5 USEPA MCLG - 0	Fumigant. NR.
Ethylene thiourea (ETU)	8/1 counties 67/1 wells	0.725 -0.725	- - -	- - -	Fumigant. NR.
Glyphosate, isopropylamine salt	52/1 counties 4671/1 wells	20 -20	- - -	- - -	Nonselective, postemergence herbicide. AR.
Heptachlor	56/4 counties 6569/12 wells	0.01 -0.25	- - -	CDPH MCL - 0.01 OEHHA PHG - 0.008 USEPA MCL - 0.4 USEPA MCLG - 0	Insecticide. NR.
Heptachlor epoxide	56/1 counties 6555/1 wells	0.01 -0.01	- - -	CDPH MCL –0.01 OEHHA PHG - 0.006 USEPA MCL – 0.2 USEPA MCLG - 0	Breakdown product of heptachlor. Heptachlor is NR.
Hexazinone	47/10 counties 2383/27 wells	0.05 -0.55	- - -	USEPA HAL – 400	Selective herbicide. AR. Detections have been determined to result from nonpoint source pesticide applications but no LAU determination has been made. CUI [d]

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Lindane (gamma-BHC)	58/3 counties 7208/6 wells	0.05 -180	0.22	CDPH MCL - 0.2 OEHHA PHG - 0.032 USEPA MCL - 0.2 USEPA MCLG – 0.2	Insecticide. AR.
Malathion	37/1 counties 1220/1 wells	0.32 -0.32	- - -	CDPH ANL – 160	Insecticide. AR.
Merphos	21/2 counties 427/2 wells	1 -1.5	- - -	- - -	Defoliant. NR.
Methomyl	52/2 counties 5445/2 wells	0.8 -15	- - -	USEPA HAL – 200.0	Insecticide. AR.
Methoxychlor	57/2 counties 6733/4 wells	0.32 -0.55	0.32 - 0.55	CDPH MCL - 30 OEHHA PHG – 30 USEPA HAL -40.0 USEPA MCL – 40 USEPA MCLG - 40	Insecticide. NR.
Methyl bromide (bromomethane)	58/15 counties 11979/36 wells	0.5 -9.3	1.9 - 9.3	USEPA HAL – 10.0	Fumigant. AR. Detections are CUI[d].
Methylene chloride (Dichloromethane)	6/2 counties 61/6 wells	3 -6	- - -	CDPH MCL – 5 OEHHA PHG – 4 USEPA MCL – 5 USEPA MCLG - 0	Fumigant. NR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Metolachlor	52/1 counties 5787/1 wells	1.1 -1.1	- - -	USEPA HAL– 700	Selective herbicide. AR. Now replaced by (S)-metolachlor. It is difficult to distinguish between the two compounds in most chemical analysis methods.
Metolachlor ESA	9/6 counties 100/32 wells	0.05 -24	- - -	- - -	Breakdown product of metolachlor. Metolachlor is AR. DPR determined that contamination of metolachlor in ground water occurred from non-point source pesticide applications. DEG
Metolachlor OXA	9/4 counties 100/11 wells	0.05 -2.65	- - -	- - -	Breakdown product of metolachlor. Metolachlor is AR. DPR determined that contamination of metolachlor in ground water occurred from non-point source pesticide applications. DEG
Metribuzin	54/1 counties 7291/1 wells	1.1 -1.1	- - -	USEPA HAL - 70	Herbicide. AR
Mexacarbate	23/1 counties 427/1 wells	22 -22	- - -	- - -	Insecticide. NR
Molinate	55/7 counties 7444/14 wells	0.002 -29	- - -	CDPH MCL - 20 OEHHA PHG - 1	Selective herbicide. AR.
Molinate sulfoxide	17/1 counties 210/1 wells	0.8 -0.8	- - -	- - -	Breakdown product of molinate. Molinate is AR. DEG

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Monuron	25/1 counties 504/4 wells	0.04 -2	- - -	- - -	Herbicide. NR.
MTP	10/1 counties 274/1 wells	2.41 -2.55	- - -	- - -	Breakdown product of chlorthal-dimethyl. AR. DEG
Naled	16/1 counties 221/1 wells	5 -5	- - -	- - -	Insecticide. AR.
Naphthalene	57/12 counties 7926/26 wells	0.5 -66	- - -	CDPH NL- 17 USEPA HAL - 100	Fumigant. NR in California since 1991.
Norflurazon	34/8 counties 1140/71 wells	0.022 -2.48	0.055 - 0.537	- - -	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Ortho-dichlorobenzene (o-Dichlorobenzene) (1,2-Dichlorobenzene)	58/10 counties 11225/22 wells	0.56 -12	8.68 - 10.6	CDPH MCL - 600 OEHHA PHG – 600 USEPA HAL – 600 USEPA MCL – 600 USEPA MCLG - 600	Herbicide and insecticide. NR.
Paraquat dichloride	32/3 counties 915/5 wells	0.91 -16	- - -	USEPA HAL - 30	Herbicide. AR.
Picloram	51/3 counties 5097/5 wells	0.1 -1.1	- - -	CDPH MCL - 500 OEHHA PHG – 500 USEPA MCL – 500 USEPA MCLG - 500	Selective herbicide. NR.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Prometon	49/13 counties 5296/52 wells	0.05 -80	0.062	USEPA HAL- 400	Nonselective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Prometryn	57/4 counties 8416/4 wells	0.1 -2.3	- - -	- - -	Selective herbicide. AR.
Propachlor	52/1 counties 5453/1 wells	1.1 -1.1	- - -	CDPH NL - 90	Selective herbicide. NR.
Propazine	41/1 counties 1136/1 wells	0.2 -0.2	- - -	USEPA HAL - 10	Selective herbicide. NR.
Propham	35/1 counties 1063/1 wells	6 -6	- - -	USEPA HAL - 100	Selective herbicide. NR.
Propoxur	46/2 counties 1560/2 wells	4 -5	- - -	USEPA HAL - 3	Insecticide. AR.
Simazine	57/29 counties 13143/841 wells	0.002 -49.2	0.053 - 0.32	CDPH MCL - 4 OEHHA PHG – 4 USEPA MCL – 4 USEPA MCLG - 4	Selective herbicide. AR. This compound has contaminated ground water due to LAU. Detections were determined to be due to LAU.
Tebuthiuron	30/6 counties 321/12 wells	0.005 -22.1	- - -	USEPA HAL - 500	Herbicide. AR CUI.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

Pesticide Detected	*Counties and Individual Wells Sampled/With Pesticide Detections*	*Historical Range of Residue Concentrations (ppb)*	*Current Range of Residue Concentrations (ppb)*	*Drinking Water Quality Standards (ppb)[a]*	*Type of Compound, Registration Status, Comments*
Tetrachloroethylene	9/3 counties 193/5 wells	0.2 -2.5	- - -	CDPH MCL – 5 OEHHA PHG - 0.06 USEPA HAL -10 USEPA MCL – 5 USEPA MCLG - 0	Insecticide. NR.
Tetrachlorvinphos (stirofos)	23/1 counties 189/1 wells	1 -1	- - -	- - -	Insecticide. AR.
Thiobencarb	55/6 counties 7247/10 wells	0.006 -8.7	1.6	CDPH MCL – 70 OEHHA PHG - 70	Selective herbicide. AR, CUI.
Thiram	2/1 counties 18/4 wells	5 -17	- - -	- - -	Fungicide. AR.
Toxaphene	58/4 counties 7256/6 wells	1 -57	- - -	CDPH MCL - 3 OEHHA PHG - 0.03 USEPA MCL - 3 USEPA MCLG- 0	Insecticide. NR.
TPA	10/8 counties 274/35 wells	0.1 -15	- - -	- - -	Breakdown product of chlorthal-dimethyl. DEG
Trifluralin	40/2 counties 1388/2 wells	0.01 -0.9	- - -	USEPA HAL – 10,	Selective herbicide. AR.
Xylene	58/32 counties 11064/115 wells	0.25 -1100	0.5 - 22	CDPH MCL - 1,750 OEHHA PHG -1,800 USEPA MCL - 10,000 USEPA MCLG – 10,000	Insecticide (NR) and solvent. Non-pesticidal uses of industrial chemicals may contribute to these findings.

Appendix C–Summary of Historical and Current Pesticide Detections and Current Water Quality Limits, con't.

(a) The following abbreviations apply to the Water Quality Limits mentioned above (All limits were converted into ppb)
1) CDPH ANL = California Department of Public Health's Archived Notification Limits. Source: CDPH. (http://www.cdph.ca.gov/certlic/drinkingwater/Pages/NotificationLevels.aspx - page last updated March 7, 2007)
2) CDPH MCL = California Department of Public Health's Maximum Concentration Limits. Source: CDPH. (http://www.cdph.ca.gov/certlic/drinkingwater/Pages/MCLsandPHGs.aspx - page last updated June 17, 2010.)
3) CDPH NL = California Department of Public Health's Notification Limits. Source: CDPH. (http://www.cdph.ca.gov/certlic/drinkingwater/Pages/NotificationLevels.aspx - page last updated December 14, 2007.)
4) OEHHA PHG = Office of Environmental Health Hazard Assessment's California Public Health Goals. Source: CDPH. (http://www.cdph.ca.gov/certlic/drinkingwater/Pages/MCLsandPHGs.aspx - page last updated June 17, 2010.)
5) USEPA HAL = U.S. Environmental Protection Agency Lifetime Health Advisory Limits. Source: Pesticide Action Network Pesticide Database. NOTE: Although HALs are established by the U.S. EPA, the Pesticide Action Network database provides the most readily accessible source of this information. (http://www.pesticideinfo.org/)
6) USEPA MCL = U. S. Environmental Protection Agency Maximum Concentration Limits. Source: U.S. EPA. (http://www.epa.gov/safewater/contaminants/#organic – page last updated July 1, 2010)
7) USEPA MCLG = U.S. Environmental Protection Agency Maximum Concentration Limit Goals. Source: U.S. EPA. NOTE: Where "0" is used for some values, it means their goal is zero, not that there wasn't an established goal. (http://www.epa.gov/safewater/contaminants/#organic – page last updated July 1, 2010)

(b) AR: Actively registered in California
(c) NR: Not registered in California
(d) CUI: Currently under investigation by DPR
(e) LAU: Legal agricultural use
(f) DEG: This compound is a degradate of a pesticide. A review of the compound by DPR's Medical Toxicology Branch's personnel determined that toxicological data are equivocal that at the detection levels that were reported, this compound did not pose a threat to public health; so no further action required

Appendix D–Well Sampling Results Summarized by County and Reporting Agency

Summary, by county, of the number of pesticides related compounds analyzed and the number detected, the number of individual wells sampled and the number of individual wells[a] with detections, by DPR and by CDPH.

COUNTY	Summary				By Reporting Agency							
					CDPH 2008				DPR July1,2008 to June 30,2009			
	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections
Alameda	57	0	27	0	57	0	27	0	-	-	-	-
Alpine	-	-	-	-	-	-	-	-	-	-	-	-
Amador	10	0	2	0	10	0	2	0	-	-	-	-
Butte	38	1	50	1	38	1	50	1	-	-	-	-
Calaveras	10	0	3	0	10	0	3	0	-	-	-	-
Colusa	4	0	2	0	4	0	2	0	-	-	-	-
Contra Costa	59	1	10	1	59	1	10	1	-	-	-	-
Del Norte	10	0	1	0	10	0	1	0	-	-	-	-
El Dorado	9	0	13	0	9	0	13	0	-	-	-	-
Fresno	47	14	354	152	39	4	305	106	12	10	49	46
Glenn	38	0	13	0	38	0	13	0	-	-	-	-
Humboldt	10	0	3	0	10	0	3	0	-	-	-	-
Imperial	-	-	-	-	-	-	-	-	-	-	-	-
Inyo	31	0	20	0	31	0	20	0	-	-	-	-
Kern	75	7	195	28	75	7	195	28	-	-	-	-
Kings	57	0	30	0	57	0	30	0	-	-	-	-
Lake	71	1	22	1	71	1	22	1	-	-	-	-
Lassen	9	0	7	0	9	0	7	0	-	-	-	-
Los Angeles	91	4	669	12	91	4	669	12	-	-	-	-
Madera	39	2	50	5	39	2	50	5	-	-	-	-
Marin	31	0	2	0	31	0	2	0	-	-	-	-
Mariposa	61	0	18	0	61	0	18	0	-	-	-	-
Mendocino	48	1	12	1	48	1	12	1	-	-	-	-
Merced	69	1	49	12	69	1	49	12	-	-	-	-
Modoc	-	-	-	-	-	-	-	-	-	-	-	-

Appendix D–Well Sampling Results Summarized by County and Reporting Agency, con't.

COUNTY	Summary				By Reporting Agency							
					CDPH 2008				DPR July1,2008 to June 30,2009			
	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections
Mono	2	0	3	0	2	0	3	0	-	-	-	-
Monterey	83	1	114	1	66	1	96	1	21	0	19	0
Napa	44	0	7	0	44	0	7	0	-	-	-	-
Nevada	5	0	1	0	5	0	1	0	-	-	-	-
Orange	77	0	205	0	77	0	205	0	-	-	-	-
Placer	59	0	7	0	59	0	7	0	-	-	-	-
Plumas	8	0	2	0	8	0	2	0	-	-	-	-
Riverside	74	2	225	12	74	2	225	12	-	-	-	-
Sacramento	60	2	123	2	60	2	123	2	-	-	-	-
San Benito	77	0	24	0	60	0	22	0	21	0	2	0
San Bernardino	92	2	338	35	92	2	338	35	-	-	-	-
San Diego	87	1	41	1	87	1	41	1	-	-	-	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	58	3	102	21	58	3	102	21	-	-	-	-
San Luis Obispo	41	2	53	4	23	2	50	4	21	0	3	0
San Mateo	60	2	21	3	60	2	21	3	-	-	-	-
Santa Barbara	73	0	47	0	55	0	38	0	21	0	9	0
Santa Clara	58	0	186	0	58	0	186	0	-	-	-	-
Santa Cruz	60	1	53	1	60	1	53	1	-	-	-	-
Shasta	11	0	21	0	11	0	21	0	-	-	-	-
Sierra	7	0	3	0	7	0	3	0	-	-	-	-
Siskiyou	6	0	3	0	6	0	3	0	-	-	-	-
Solano	55	0	25	0	55	0	25	0	-	-	-	-
Sonoma	75	1	91	4	75	1	91	4	-	-	-	-
Stanislaus	74	1	123	23	74	1	123	23	-	-	-	-
Sutter	47	0	4	0	47	0	4	0	-	-	-	-
Tehama	8	0	5	0	8	0	5	0	-	-	-	-
Trinity	-	-	-	-	-	-	-	-	-	-	-	-

Appendix D–Well Sampling Results Summarized by County and Reporting Agency, con't.

COUNTY	Summary				By Reporting Agency							
					CDPH 2008				DPR July1,2008 to June 30,2009			
	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections	Pesticides Analyzed	Pesticides Detected	Wells Sampled	Wells with Detections
Tulare	68	10	185	54	61	2	166	35	12	9	19	19
Tuolumne	24	0	16	0	24	0	16	0	-	-	-	-
Ventura	72	3	64	5	55	3	63	5	21	0	1	0
Yolo	54	0	32	0	54	0	32	0	-	-	-	-
Yuba	11	1	15	1	11	1	15	1	-	-	-	-

(a) Some of the wells counted in this table were sampled more than once during the reporting period. For the purposes of this table, a well is only counted once regardless of the number of samples taken.

Appendix E–Well Sampling Results Summarized by County and Pesticide

Appendix E summarizes the reported results of wells sampled for pesticides and/or pesticide degradates from January 2008 through June 2009 for each county where sampling occurred. Each county table lists the pesticides and/or pesticide degradates that were sampled, the number of individual wells sampled for each pesticide and/or pesticide degradate and the number of wells where detections occurred.

Approximately 18% of the wells had two to eight different pesticides and/or pesticide degradates detected during this reporting period. A well with more than one pesticide or pesticide degradation product detected will appear more than once in a county table. As a result, the total number of wells with detections in a county in Appendix E *will appear to* exceed the number in each county in Appendix D.

The links in the table below allow you to navigate to a specific county to view that county's data. Clicking on the county name at the top of each county table will take you back to this page.

Alameda		Marin		San Mateo	*
Alpine	**NS**	Mariposa		Santa Barbara	
Amador		Mendocino	*	Santa Clara	
Butte	*	Merced	*	Santa Cruz	*
Calaveras		Modoc	**NS**	Shasta	
Colusa		Mono		Sierra	
Contra Costa	*	Monterey	*	Siskiyou	
Del Norte		Napa		Solano	
El Dorado		Nevada		Sonoma	*
Fresno	*	Orange		Stanislaus	*
Glenn		Placer		Sutter	
Humboldt		Plumas		Tehama	
Imperial	**NS**	Riverside	*	Trinity	**NS**
Inyo		Sacramento	*	Tulare	*
Kern	*	San Benito		Tuolumne	
Kings	*	San Bernardino	*	Ventura	*
Lake	*	San Diego	*	Yolo	
Lassen		San Francisco-	**NS**	Yuba	*
Los Angeles	*	San Joaquin	*		
Madera	*	San Luis Obispo	*		

* = Counties that had pesticide detections.
NS = Counties that were not sampled.

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Alameda	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,2,4-Trichlorobenzene	27	
	1,2-D + 1,3-D + C-3 compounds	27	
	1,2-Dichloropropane (propylene dichloride)	27	
	2,3,7,8-TCDD (dioxin)	20	
	2,4,5-T	1	
	2,4,5-TP (silvex)	20	
	2,4-D	20	
	3-Hydroxycarbofuran	20	
	Alachlor	20	
	Aldicarb	20	
	Aldicarb sulfone	20	
	Aldicarb sulfoxide	20	
	Aldrin	20	
	Atrazine	20	
	Bentazon, sodium salt	20	
	Bromacil	20	
	Butachlor	20	
	Carbaryl	20	
	Carbofuran	20	
	Chlordane	20	
	Chlorothalonil	1	
	Chlorthal-dimethyl acid degradates	19	
	Dalapon	20	
	DBCP	22	
	Diazinon	20	
	Dicamba	20	
	Dieldrin	20	
	Dimethoate	20	
	Dinoseb	20	
	Diquat dibromide	20	
	Diuron	16	
	Endothall	20	
	Endrin	20	
	Ethylene dibromide	22	
	Glyphosate, isopropylamine salt	20	
	Heptachlor	20	
	Heptachlor epoxide	20	
	Hexachlorobenzene	20	
	Lindane (gamma-BHC)	20	
	Methiocarb	2	
	Methomyl	20	
	Methoxychlor	20	
	Methyl bromide (bromomethane)	21	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Alameda	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Metolachlor	20	
	Metribuzin	20	
	Molinate	20	
	Naphthalene	27	
	Ortho-dichlorobenzene	27	
	Oxamyl	20	
	Picloram	20	
	Propachlor	20	
	Propoxur	2	
	Simazine	20	
	Thiobencarb	20	
	Toxaphene	20	
	Trifluralin	1	
	Xylene	27	

Alpine	*Chemical*	*Wells Sampled*	*Wells with Detections*
	NOT SAMPLED IN THE CURRENT YEAR		

Amador	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	1	
	1,2,4-Trichlorobenzene	2	
	1,2-D + 1,3-D + C-3 compounds	2	
	1,2-Dichloropropane (propylene dichloride)	2	
	DBCP	2	
	Ethylene dibromide	2	
	Methyl bromide (bromomethane)	2	
	Naphthalene	2	
	Ortho-dichlorobenzene	2	
	Xylene	2	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Butte	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	10	
	1,2,4-Trichlorobenzene	35	
	1,2-D + 1,3-D + C-3 compounds	35	
	1,2-Dichloropropane (propylene dichloride)	35	
	2,4,5-T	21	
	2,4,5-TP (silvex)	21	
	2,4-D	25	
	3-Hydroxycarbofuran	21	
	Alachlor	19	
	Aldicarb	21	
	Aldicarb sulfone	21	
	Aldicarb sulfoxide	21	
	Atrazine	23	
	Bentazon, sodium salt	21	
	Bromacil	19	
	Butachlor	19	
	Carbaryl	21	
	Carbofuran	25	
	Carbon disulfide	3	
	Dalapon	21	
	Diazinon	14	
	Dicamba	21	
	Dimethoate	19	
	Dinoseb	21	
	Glyphosate, isopropylamine salt	21	
	Methomyl	21	
	Methyl bromide (bromomethane)	16	
	Metolachlor	19	
	Metribuzin	19	
	Molinate	23	
	Naphthalene	34	
	Ortho-dichlorobenzene	35	
	Oxamyl	21	
	Picloram	21	
	Propachlor	19	
	Simazine	23	
	Thiobencarb	23	
	Xylene	35	1

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Calaveras	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	2	
	1,2-D + 1,3-D + C-3 compounds	2	
	1,2-Dichloropropane (propylene dichloride)	2	
	DBCP	2	
	Ethylene dibromide	2	
	Methyl bromide (bromomethane)	2	
	Naphthalene	2	
	Ortho-dichlorobenzene	2	
	Thiobencarb	1	
	Xylene	2	

Colusa	Chemical	Wells Sampled	Wells with Detections
	Atrazine	1	
	Molinate	1	
	Simazine	1	
	Thiobencarb	2	

Contra Costa	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	8	
	1,2,4-Trichlorobenzene	10	
	1,2-D + 1,3-D + C-3 compounds	8	
	1,2-Dichloropropane (propylene dichloride)	10	
	2,3,7,8-TCDD (dioxin)	3	
	2,4,5-T	2	
	2,4,5-TP (silvex)	8	
	2,4-D	8	
	3-Hydroxycarbofuran	8	
	Alachlor	8	
	Aldicarb	8	
	Aldicarb sulfone	8	
	Aldicarb sulfoxide	8	
	Aldrin	7	
	Atrazine	7	
	Bentazon, sodium salt	8	
	Bromacil	6	
	Butachlor	6	
	Carbaryl	8	
	Carbofuran	8	
	Carbon disulfide	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Contra Costa	Chemical	Wells Sampled	Wells with Detections
	Chlordane	8	
	Chlorothalonil	2	
	Chlorthal-dimethyl acid degradates	2	
	Dalapon	8	
	DBCP	8	1
	Diazinon	6	
	Dicamba	4	
	Dieldrin	7	
	Dimethoate	6	
	Dinoseb	8	
	Diquat dibromide	8	
	Diuron	4	
	Endothall	8	
	Endrin	8	
	Ethylene dibromide	8	
	Glyphosate, isopropylamine salt	8	
	Heptachlor	8	
	Heptachlor epoxide	8	
	Hexachlorobenzene	7	
	Lindane (gamma-BHC)	8	
	Methomyl	8	
	Methoxychlor	8	
	Methyl bromide (bromomethane)	8	
	Metolachlor	6	
	Metribuzin	6	
	Molinate	7	
	Naphthalene	8	
	Ortho-dichlorobenzene	10	
	Oxamyl	8	
	Paraquat dichloride	3	
	Picloram	8	
	Prometryn	4	
	Propachlor	6	
	Simazine	7	
	Thiobencarb	7	
	Toxaphene	8	
	Trifluralin	2	
	Xylene	5	

Del Norte	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	1	
	1,2,4-Trichlorobenzene	1	
	1,2-D + 1,3-D + C-3 compounds	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Del Norte	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,2-Dichloropropane (propylene dichloride)	1	
	DBCP	1	
	Ethylene dibromide	1	
	Methyl bromide (bromomethane)	1	
	Naphthalene	1	
	Ortho-dichlorobenzene	1	
	Xylene	1	

El Dorado	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	1	
	1,2,4-Trichlorobenzene	12	
	1,2-D + 1,3-D + C-3 compounds	12	
	1,2-Dichloropropane (propylene dichloride)	12	
	Methyl bromide (bromomethane)	12	
	Naphthalene	10	
	Ortho-dichlorobenzene	12	
	Thiobencarb	1	
	Xylene	12	

Fresno	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	223	1
	1,2,4-Trichlorobenzene	241	
	1,2-D + 1,3-D + C-3 compounds	241	
	1,2-Dichloropropane (propylene dichloride)	241	1
	Deethyl-simazine or deisopropyl-atrazine (ACET)	49	44
	Alachlor	243	
	Atraton	1	
	Atrazine	293	1
	BHC (other than gamma isomer)	1	
	Bromacil	287	12
	Butachlor	237	
	Carbon disulfide	21	
	Chlordane	5	
	DBCP	289	105
	Deethyl-atrazine (DEA)	49	9
	Desmethylnorflurazon	49	24
	Diaminochlorotriazine (DACT)	49	42
	Diazinon	222	
	Dimethoate	238	
	Diuron	49	20

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Fresno	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Endrin	5	
	EPTC	6	
	Ethylene dibromide	288	3
	Heptachlor	5	
	Heptachlor epoxide	5	
	Hexachlorobenzene	6	
	Hexazinone	49	
	Lindane (gamma-BHC)	6	
	Methoxychlor	6	
	Methyl bromide (bromomethane)	238	
	Metolachlor	238	
	Metribuzin	238	
	Molinate	238	
	Naphthalene	235	
	Norflurazon	49	9
	Ortho-dichlorobenzene	241	
	Prometon	55	1
	Prometryn	12	
	Propachlor	237	
	Secbumeton	1	
	Simazine	293	30
	Tebuthiuron	49	
	Terbacil	6	
	Terbutryn	1	
	Thiobencarb	240	
	Toxaphene	5	
	Xylene	241	

Glenn	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	3	
	1,2,4-Trichlorobenzene	7	
	1,2-D + 1,3-D + C-3 compounds	7	
	1,2-Dichloropropane (propylene dichloride)	7	
	2,4,5-T	1	
	2,4,5-TP (silvex)	1	
	2,4-D	2	
	3-Hydroxycarbofuran	1	
	Alachlor	1	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Atrazine	2	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Glenn	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Bentazon, sodium salt	1	
	Bromacil	1	
	Butachlor	1	
	Carbaryl	1	
	Carbofuran	2	
	Dalapon	1	
	DBCP	7	
	Dicamba	1	
	Dimethoate	1	
	Dinoseb	1	
	Ethylene dibromide	7	
	Glyphosate, isopropylamine salt	2	
	Methomyl	1	
	Methyl bromide (bromomethane)	3	
	Metolachlor	1	
	Metribuzin	1	
	Molinate	1	
	Naphthalene	7	
	Ortho-dichlorobenzene	7	
	Oxamyl	1	
	Picloram	1	
	Propachlor	1	
	Simazine	1	
	Thiobencarb	1	
	Xylene	7	

Humboldt	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	3	
	1,2,4-Trichlorobenzene	3	
	1,2-D + 1,3-D + C-3 compounds	3	
	1,2-Dichloropropane (propylene dichloride)	3	
	DBCP	2	
	Ethylene dibromide	2	
	Methyl bromide (bromomethane)	3	
	Naphthalene	3	
	Ortho-dichlorobenzene	3	
	Xylene	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Imperial	Chemical	Wells Sampled	Wells with Detections
	NOT SAMPLED IN CURRENT YEAR		

Inyo	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	8	
	1,2,4-Trichlorobenzene	18	
	1,2-D + 1,3-D + C-3 compounds	14	
	1,2-Dichloropropane (propylene dichloride)	18	
	2,3,7,8-TCDD (dioxin)	3	
	Aldrin	3	1
	BHC (other than gamma isomer)	3	
	Chlordane	3	
	Chlorothalonil	3	
	DBCP	4	
	DDD	3	
	DDE	3	
	DDT	3	
	Dieldrin	3	
	Endosulfan	3	
	Endosulfan sulfate	3	
	Endothall	3	
	Endrin	3	1
	Endrin aldehyde	3	
	Ethylene dibromide	3	
	Heptachlor	3	
	Heptachlor epoxide	3	
	Hexachlorobenzene	3	
	Methoxychlor	3	
	Methyl bromide (bromomethane)	14	
	Naphthalene	14	
	Ortho-dichlorobenzene	18	
	Propachlor	3	
	Toxaphene	3	
	Trifluralin	3	
	Xylene	18	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Kern	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	37	
	1,2,4-Trichlorobenzene	107	
	1,2-D + 1,3-D + C-3 compounds	104	
	1,2-Dichloropropane (propylene dichloride)	107	3
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-T	3	
	2,4,5-TP (silvex)	4	
	2,4,6-trichlorophenol	1	
	2,4-D	4	
	2,4-Dinitrophenol	1	
	3-Hydroxycarbofuran	3	
	4(2,4-DB), dimethylamine salt	1	
	Alachlor	17	
	Aldicarb	3	
	Aldicarb sulfone	3	
	Aldicarb sulfoxide	3	
	Aldrin	3	
	Atraton	4	
	Atrazine	18	1
	Bentazon, sodium salt	4	
	BHC (other than gamma isomer)	4	
	Bromacil	10	
	Butachlor	6	
	Carbaryl	3	
	Carbofuran	4	
	Chlordane	4	
	Chlorothalonil	2	
	Dalapon	4	
	DBCP	141	22
	DDD	1	
	DDE	1	
	DDT	1	
	Diazinon	7	
	Dicamba	3	
	Dichlorprop, butoxyethanol ester	1	
	Dieldrin	3	
	Dimethoate	26	
	Dinoseb	4	
	Diquat dibromide	4	
	Diuron	1	
	Endosulfan	1	
	Endosulfan sulfate	1	
	Endothall	4	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Kern	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Endrin	5	
	Endrin aldehyde	1	
	Ethylene dibromide	126	1
	Glyphosate, isopropylamine salt	4	
	Heptachlor	4	
	Heptachlor epoxide	4	
	Hexachlorobenzene	7	
	Lindane (gamma-BHC)	7	1
	MCPA, dimethylamine salt	1	
	MCPP (2-(4-chloro-2-methylphenoxy)propionic acid)	1	
	Methiocarb	1	
	Methomyl	3	
	Methoxychlor	7	2
	Methyl bromide (bromomethane)	39	
	Metolachlor	10	
	Metribuzin	10	
	Molinate	11	
	Naphthalene	103	
	Ortho-dichlorobenzene	107	
	Oxamyl	4	
	Picloram	3	
	Prometon	4	
	Prometryn	4	
	Propachlor	6	
	Propoxur	1	
	Secbumeton	4	
	Simazine	18	
	Terbutryn	4	
	Thiobencarb	11	
	Toxaphene	4	
	Trifluralin	2	
	Xylene	109	1

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Kings	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	2	
	1,2,4-Trichlorobenzene	2	
	1,2-D + 1,3-D + C-3 compounds	2	
	1,2-Dichloropropane (propylene dichloride)	2	
	2,4,5-T	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	1	
	Alachlor	2	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Aldrin	1	
	Atraton	1	
	Atrazine	2	
	Bentazon, sodium salt	1	
	BHC (other than gamma isomer)	1	
	Bromacil	2	
	Butachlor	1	
	Carbaryl	1	
	Carbofuran	1	
	Chlordane	1	
	Chlorothalonil	1	
	Dalapon	1	
	DBCP	26	
	Diazinon	1	
	Dicamba	1	
	Dieldrin	1	
	Dimethoate	2	
	Dinoseb	1	
	Endothall	1	
	Endrin	1	
	Ethylene dibromide	26	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	2	
	Lindane (gamma-BHC)	2	
	Methomyl	1	
	Methoxychlor	2	
	Methyl bromide (bromomethane)	2	
	Metolachlor	2	
	Metribuzin	2	
	Molinate	2	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Kings	Chemical	Wells Sampled	Wells with Detections
	Naphthalene	2	
	Ortho-dichlorobenzene	2	
	Oxamyl	1	
	Picloram	1	
	Prometon	1	
	Prometryn	1	
	Propachlor	1	
	Secbumeton	1	
	Simazine	2	
	Terbutryn	1	
	Thiobencarb	2	
	Toxaphene	1	
	Trifluralin	1	
	Xylene	4	

Lake	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	4	
	1,2,4-Trichlorobenzene	5	
	1,2-D + 1,3-D + C-3 compounds	4	
	1,2-Dichloropropane (propylene dichloride)	5	
	2,4,5-T	16	
	2,4,5-TP (silvex)	17	
	2,4-D	17	
	3-Hydroxycarbofuran	11	
	4(2,4-DB), dimethylamine salt	16	
	Acifluorfen, sodium salt	10	
	Acrylonitrile	4	
	Alachlor	12	
	Aldicarb	11	
	Aldicarb sulfone	11	
	Aldicarb sulfoxide	11	
	Aldrin	3	
	Atrazine	15	
	Bentazon, sodium salt	17	
	BHC (other than gamma isomer)	1	
	Bromacil	9	
	Butachlor	9	
	Carbaryl	11	
	Carbofuran	13	
	Carbon disulfide	4	
	Chlordane	3	
	Chlorobenzilate	1	
	Chloroneb	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Lake	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Chlorothalonil	1	
	Chlorthal-dimethyl acid degradates	8	
	Dalapon	17	
	DBCP	2	
	DDD	1	
	DDE	1	
	DDT	1	
	Dicamba	16	
	Dichlorprop, butoxyethanol ester	10	
	Dieldrin	3	
	Dimethoate	9	
	Dinoseb	17	
	Diquat dibromide	13	1
	Endosulfan	1	
	Endosulfan sulfate	1	
	Endothall	15	
	Endrin	3	
	Endrin aldehyde	1	
	Ethylene dibromide	4	
	Heptachlor	3	
	Heptachlor epoxide	3	
	Hexachlorobenzene	3	
	Lindane (gamma-BHC)	3	
	Methiocarb	11	
	Methomyl	11	
	Methoxychlor	3	
	Methyl bromide (bromomethane)	4	
	Metolachlor	9	
	Metribuzin	9	
	Molinate	10	
	Naphthalene	4	
	Ortho-dichlorobenzene	5	
	Oxamyl	14	
	Permethrin	1	
	Permethrin, other related compounds	1	
	Picloram	17	
	Prometryn	9	
	Propachlor	10	
	Propoxur	11	
	Simazine	15	
	Thiobencarb	10	
	Toxaphene	3	
	Trifluralin	1	
	Xylene	5	

Lassen	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	6	
	1,2,4-Trichlorobenzene	6	
	1,2-D + 1,3-D + C-3 compounds	6	
	1,2-Dichloropropane (propylene dichloride)	6	
	DBCP	1	
	Methyl bromide (bromomethane)	6	
	Naphthalene	6	
	Ortho-dichlorobenzene	6	
	Xylene	7	

Los Angeles	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	336	
	1,2,4-Trichlorobenzene	597	
	1,2-D + 1,3-D + C-3 compounds	455	
	1,2-Dichloropropane (propylene dichloride)	658	
	2,3,7,8-TCDD (dioxin)	95	
	2,4,5-T	11	
	2,4,5-TP (silvex)	44	
	2,4-D	44	
	3-Hydroxycarbofuran	32	
	4(2,4-DB), dimethylamine salt	9	
	Acenaphthene	5	
	Acetochlor	8	
	Acifluorfen, sodium salt	9	
	Alachlor	65	
	Aldicarb	34	
	Aldicarb sulfone	34	
	Aldicarb sulfoxide	34	
	Aldrin	26	
	Ametryne	2	
	Atrazine	72	
	Bentazon, sodium salt	44	
	BHC (other than gamma isomer)	7	
	Bromacil	39	
	Butachlor	41	
	Butylate	2	
	Carbaryl	32	
	Carbofuran	45	
	Carbon disulfide	10	
	Chlordane	45	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Los **Angeles**	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Chloroneb	2	
	Chlorothalonil	17	
	Chlorpropham	16	
	Chlorpyrifos	2	
	Cycloate	2	
	Dalapon	44	
	Dacthal (chlorthal-dimethyl / DCPA)	8	1
	Dacthal degradates (chlorthal-dimethyl acid degradates)	18	
	DBCP	75	1
	DDD	7	
	DDE	7	
	DDT	7	
	Diazinon	31	
	Dicamba	31	
	Dichlorprop, butoxyethanol ester	9	
	Dieldrin	26	
	Dimethoate	39	
	Dinoseb	44	
	Diphenamid	16	
	Diquat dibromide	43	
	Disulfoton	8	
	Diuron	9	
	Endosulfan	7	
	Endosulfan sulfate	7	
	Endothall	43	
	Endrin	45	
	Endrin aldehyde	7	
	EPTC	6	
	Ethion	5	
	Ethylene dibromide	72	
	Glyphosate, isopropylamine salt	45	
	Heptachlor	45	
	Heptachlor epoxide	45	
	Hexachlorobenzene	47	
	Lindane (gamma-BHC)	43	
	Methiocarb	10	
	Methomyl	32	
	Methoxychlor	45	
	Methyl bromide (bromomethane)	422	
	Metolachlor	41	
	Metribuzin	41	
	Molinate	67	
	Naphthalene	233	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Los Angeles	Chemical	Wells Sampled	Wells with Detections
	Napropamide	2	
	Ortho-dichlorobenzene	658	9
	Oxamyl	45	
	Paraquat dichloride	6	
	Picloram	44	
	Prometon	17	
	Prometryn	24	
	Propachlor	28	
	Propazine	2	
	Propoxur	6	
	Simazine	70	
	Simetryn	2	
	Terbacil	19	
	Thiobencarb	84	1
	Toxaphene	45	
	Triadimefon	2	
	Trifluralin	14	
	Vernolate	2	
	Xylene	658	

Madera	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	37	
	1,2,4-Trichlorobenzene	47	
	1,2-D + 1,3-D + C-3 compounds	47	
	1,2-Dichloropropane (propylene dichloride)	47	
	Alachlor	27	
	Atraton	1	
	Atrazine	27	
	BHC (other than gamma isomer)	1	
	Bromacil	13	
	Butachlor	12	
	Carbon disulfide	12	
	Chlordane	14	
	DBCP	18	5
	Diazinon	10	
	Dimethoate	13	
	Endrin	14	
	EPTC	9	
	Ethylene dibromide	18	1
	Heptachlor	14	
	Heptachlor epoxide	14	
	Hexachlorobenzene	15	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Madera	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Lindane (gamma-BHC)	15	
	Methoxychlor	15	
	Methyl bromide (bromomethane)	47	
	Metolachlor	13	
	Metribuzin	13	
	Molinate	13	
	Naphthalene	47	
	Ortho-dichlorobenzene	47	
	Prometon	10	
	Prometryn	10	
	Propachlor	3	
	Secbumeton	1	
	Simazine	27	
	Terbacil	9	
	Terbutryn	1	
	Thiobencarb	13	
	Toxaphene	14	
	Xylene	47	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Marin	*Chemical*	*Wells Sampled*	*Wells with Detections*
	2,4,5-T	2	
	2,4,5-TP (silvex)	2	
	2,4-D	2	
	3-Hydroxycarbofuran	1	
	4(2,4-DB), dimethylamine salt	1	
	Alachlor	1	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Atrazine	1	
	Bentazon, sodium salt	2	
	Bromacil	1	
	Butachlor	1	
	Carbaryl	1	
	Carbofuran	1	
	Dalapon	2	
	Dicamba	2	
	Dimethoate	1	
	Dinoseb	2	
	Diquat dibromide	1	
	Endothall	1	
	Glyphosate, isopropylamine salt	1	
	Methomyl	1	
	Metolachlor	1	
	Metribuzin	1	
	Molinate	1	
	Oxamyl	1	
	Picloram	2	
	Propachlor	1	
	Simazine	1	
	Thiobencarb	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Mariposa	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	10	
	1,2,4-Trichlorobenzene	12	
	1,2-D + 1,3-D + C-3 compounds	12	
	1,2-Dichloropropane (propylene dichloride)	12	
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	1	
	Acetochlor	1	
	Alachlor	16	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Aldrin	1	
	Atrazine	16	
	Bentazon, sodium salt	1	
	Bromacil	8	
	Butachlor	8	
	Carbaryl	1	
	Carbofuran	1	
	Carbon disulfide	1	
	Chlordane	9	
	Chlorothalonil	2	
	Dalapon	1	
	DBCP	1	
	Diazinon	5	
	Dicamba	1	
	Dichlorprop, butoxyethanol ester	1	
	Dieldrin	1	
	Dimethoate	8	
	Dinoseb	1	
	Diquat dibromide	1	
	Endrin	9	
	EPTC	1	
	Ethylene dibromide	1	
	Glyphosate, isopropylamine salt	1	
	Heptachlor	9	
	Heptachlor epoxide	9	
	Lindane (gamma-BHC)	9	
	Methiocarb	1	
	Methomyl	1	
	Methoxychlor	9	
	Methyl bromide (bromomethane)	12	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Mariposa	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Metolachlor	8	
	Metribuzin	8	
	Molinate	8	
	Naphthalene	10	
	Ortho-dichlorobenzene	12	
	Oxamyl	1	
	Picloram	1	
	Prometon	1	
	Prometryn	5	
	Propachlor	7	
	Propoxur	1	
	Simazine	16	
	Terbacil	2	
	Thiobencarb	8	
	Toxaphene	9	
	Trifluralin	1	
	Xylene	12	

Mendocino	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	9	
	1,2,4-Trichlorobenzene	9	
	1,2-D + 1,3-D + C-3 compounds	9	
	1,2-Dichloropropane (propylene dichloride)	9	
	2,4,5-T	2	
	2,4,5-TP (silvex)	2	
	2,4-D	2	
	3-Hydroxycarbofuran	1	
	4(2,4-DB), dimethylamine salt	2	
	Acifluorfen, sodium salt	2	
	Acrylonitrile	8	
	Alachlor	5	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Atrazine	6	
	Bentazon, sodium salt	2	
	Bromacil	4	
	Butachlor	5	
	Carbaryl	1	
	Carbofuran	1	
	Carbon disulfide	8	
	Chlorthal-dimethyl acid degradates	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Mendocino	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Dalapon	2	
	DBCP	2	
	Dicamba	2	
	Dichlorprop, butoxyethanol ester	2	
	Dimethoate	5	
	Dinoseb	2	
	Diquat dibromide	2	1
	Endothall	1	
	Ethylene dibromide	2	
	Methiocarb	1	
	Methomyl	1	
	Methyl bromide (bromomethane)	9	
	Metolachlor	5	
	Metribuzin	5	
	Molinate	5	
	Naphthalene	9	
	Ortho-dichlorobenzene	9	
	Oxamyl	1	
	Picloram	2	
	Prometryn	5	
	Propachlor	5	
	Propoxur	1	
	Simazine	6	
	Thiobencarb	5	
	Xylene	9	

Merced	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	8	
	1,2,4-Trichlorobenzene	27	
	1,2-D + 1,3-D + C-3 compounds	25	
	1,2-Dichloropropane (propylene dichloride)	27	
	2,4,5-T	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	1	
	4(2,4-DB), dimethylamine salt	1	
	Alachlor	27	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Aldrin	1	
	Atraton	2	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Merced	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Atrazine	27	
	Bentazon, sodium salt	1	
	BHC (other than gamma isomer)	2	
	Bromacil	26	
	Butachlor	24	
	Carbaryl	1	
	Carbofuran	1	
	Carbon disulfide	17	
	Chlordane	2	
	Dalapon	1	
	DBCP	43	12
	DDD	1	
	DDE	1	
	DDT	1	
	Diazinon	12	
	Dicamba	1	
	Dichlorprop, butoxyethanol ester	1	
	Dieldrin	1	
	Dimethoate	26	
	Dinoseb	1	
	Diquat dibromide	1	
	Endosulfan	1	
	Endosulfan sulfate	1	
	Endothall	1	
	Endrin	2	
	Endrin aldehyde	1	
	Ethylene dibromide	41	
	Glyphosate, isopropylamine salt	1	
	Heptachlor	2	
	Heptachlor epoxide	2	
	Hexachlorobenzene	3	
	Lindane (gamma-BHC)	3	
	MCPA, dimethylamine salt	1	
	MCPP (2-(4-chloro-2-methylphenoxy)propionic acid)	1	
	Methiocarb	1	
	Methomyl	1	
	Methoxychlor	3	
	Methyl bromide (bromomethane)	25	
	Metolachlor	26	
	Metribuzin	26	
	Molinate	26	
	Naphthalene	25	
	Ortho-dichlorobenzene	27	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Merced	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Oxamyl	1	
	Prometon	2	
	Prometryn	2	
	Propachlor	24	
	Propoxur	1	
	Secbumeton	2	
	Simazine	27	
	Terbutryn	2	
	Thiobencarb	26	
	Toxaphene	2	
	Xylene	27	

Modoc	*Chemical*	*Wells Sampled*	*Wells with Detections*
	NOT SAMPLED IN THE CURRENT YEAR		

Mono	*Chemical*	*Wells Sampled*	*Wells with Detections*
	DBCP	3	
	Ethylene dibromide	3	

Monterey	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	20	
	1,2,4-Trichlorobenzene	52	
	1,2-D + 1,3-D + C-3 compounds	43	
	1,2-Dichloropropane (propylene dichloride)	52	
	2,4,5-T	40	
	2,4,5-TP (silvex)	41	
	2,4-D	64	
	3-Hydroxycarbofuran	31	
	4(2,4-DB), dimethylamine salt	4	
	Deethyl-simazine or deisopropyl-atrazine (ACET)	19	
	Acifluorfen, sodium salt	3	
	Alachlor	49	
	Aldicarb	31	
	Aldicarb sulfone	31	
	Aldicarb sulfoxide	31	
	Aldrin	1	
	Atraton	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Monterey	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Atrazine	91	
	Bentazon, sodium salt	42	
	BHC (other than gamma isomer)	1	
	Bromacil	65	
	Butachlor	46	
	Carbaryl	31	
	Carbofuran	32	
	Carbon disulfide	6	
	Chlordane	2	
	Chlorthal-dimethyl acid degradates	4	
	Dalapon	41	
	DBCP	7	
	Deethyl-atrazine (DEA)	19	
	Desmethylnorflurazon	19	
	Diaminochlorotriazine (DACT)	19	
	Diazinon	13	
	Dicamba	41	
	Dichlorprop, butoxyethanol ester	4	
	Dieldrin	1	
	Dimethoate	47	
	Dinoseb	41	
	Diquat dibromide	64	
	Diuron	19	
	Endothall	2	
	Endrin	2	
	Ethylene dibromide	3	
	Glyphosate, isopropylamine salt	2	
	Heptachlor	2	
	Heptachlor epoxide	2	
	Hexachlorobenzene	3	
	Hexazinone	19	
	Imidacloprid	19	
	Imidacloprid guanidine	19	
	Imidacloprid olefin	19	
	Imidacloprid olefinic-guanidine	19	
	Imidacloprid urea	19	
	Lindane (gamma-BHC)	3	
	MCPA, dimethylamine salt	1	
	MCPP (2-(4-chloro-2-methylphenoxy)propionic acid)	1	
	Methiocarb	2	
	Methomyl	31	
	Methoxychlor	3	
	Methyl bromide (bromomethane)	28	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Monterey	Chemical	Wells Sampled	Wells with Detections
	Metolachlor	47	
	Metribuzin	47	
	Molinate	48	
	Naphthalene	43	
	Norflurazon	19	
	Ortho-dichlorobenzene	52	
	Oxamyl	31	
	Picloram	40	
	Prometon	20	
	Prometryn	1	
	Propachlor	46	
	Propoxur	1	
	Secbumeton	1	
	Simazine	91	
	Tebuthiuron	19	
	Tebuthiuron degradate 104 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea)	19	
	Tebuthiuron degradate 106 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea)	19	
	Tebuthiuron degradate 107 (2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole)	19	
	Tebuthiuron degradate 108 (2-Dimethylethyl-5-amino-1,3,4-thiadiazole)	19	
	Terbutryn	1	
	Thiobencarb	50	
	Toxaphene	2	
	Xylene	52	1

Napa	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	2	
	1,2-D + 1,3-D + C-3 compounds	2	
	1,2-Dichloropropane (propylene dichloride)	2	
	2,4,5-T	3	
	2,4,5-TP (silvex)	5	
	2,4-D	5	
	3-Hydroxycarbofuran	5	
	4(2,4-DB), dimethylamine salt	1	
	Alachlor	5	
	Aldicarb	5	
	Aldicarb sulfone	5	
	Aldicarb sulfoxide	5	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Napa	Chemical	Wells Sampled	Wells with Detections
	Atrazine	6	
	Bentazon, sodium salt	5	
	Bromacil	5	
	Butachlor	5	
	Carbaryl	5	
	Carbofuran	5	
	Chlorthal-dimethyl acid degradates	2	
	Dalapon	5	
	DBCP	1	
	Diazinon	4	
	Dicamba	5	
	Dimethoate	5	
	Dinoseb	5	
	Diquat dibromide	5	
	Endothall	5	
	Ethylene dibromide	1	
	Methiocarb	1	
	Methomyl	5	
	Methyl bromide (bromomethane)	2	
	Metolachlor	5	
	Metribuzin	5	
	Molinate	5	
	Naphthalene	1	
	Ortho-dichlorobenzene	2	
	Oxamyl	5	
	Picloram	5	
	Prometryn	4	
	Propachlor	5	
	Propoxur	1	
	Simazine	6	
	Thiobencarb	5	
	Xylene	2	

Nevada	Chemical	Wells Sampled	Wells with Detections
	Atrazine	1	
	Hexachlorobenzene	1	
	Molinate	1	
	Simazine	1	
	Thiobencarb	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Orange	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	195	
	1,2,4-Trichlorobenzene	201	
	1,2-D + 1,3-D + C-3 compounds	200	
	1,2-Dichloropropane (propylene dichloride)	202	
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-TP (silvex)	20	
	2,4,6-trichlorophenol	14	
	2,4-D	20	
	2,4-Dinitrophenol	14	
	3-Hydroxycarbofuran	21	
	Acenaphthene	19	
	Acetochlor	24	
	Alachlor	61	
	Aldicarb	21	
	Aldicarb sulfone	21	
	Aldicarb sulfoxide	21	
	Aldrin	22	
	Atrazine	64	
	Bentazon, sodium salt	20	
	BHC (other than gamma isomer)	21	
	Bromacil	60	
	Butachlor	60	
	Carbaryl	21	
	Carbofuran	21	
	Chlordane	20	
	Chlorothalonil	21	
	Cyanazine	3	
	Dalapon	20	
	DBCP	195	
	DDD	21	
	DDE	21	
	DDT	21	
	Diazinon	60	
	Dicamba	20	
	Dieldrin	21	
	Dimethoate	60	
	Dinoseb	20	
	Diquat dibromide	21	
	Disulfoton	14	
	Diuron	21	
	Endosulfan	21	
	Endosulfan sulfate	21	
	Endothall	21	
	Endrin	22	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Orange	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Endrin aldehyde	21	
	Ethylene dibromide	195	
	Fonofos (dyfonate)	14	
	Glyphosate, isopropylamine salt	21	
	Heptachlor	22	
	Heptachlor epoxide	22	
	Hexachlorobenzene	25	
	Lindane (gamma-BHC)	21	
	Linuron	21	
	Malathion	57	
	Methiocarb	21	
	Methomyl	21	
	Methoxychlor	22	
	Methyl bromide (bromomethane)	200	
	Methyl parathion	57	
	Metolachlor	60	
	Metribuzin	60	
	Molinate	60	
	Naphthalene	199	
	Ortho-dichlorobenzene	202	
	Oxamyl	21	
	Paraquat dichloride	21	
	Parathion or ethyl parathion	57	
	Picloram	20	
	Prometon	60	
	Prometryn	60	
	Propachlor	57	
	Propoxur	21	
	Simazine	64	
	Terbacil	3	
	Thiobencarb	62	
	Toxaphene	20	
	Xylene	202	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Placer	Chemical	Wells Sampled	Wells with Detections
	1,3-Dichloropropene (1,3-D, telone)	1	
	1,2,4-Trichlorobenzene	7	
	1,2-D + 1,3-D + C-3 compounds	5	
	1,2-Dichloropropane (propylene dichloride)	7	
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-T	1	
	2,4,5-TP (silvex)	1	
	2,4-D	1	
	3-Hydroxycarbofuran	1	
	4(2,4-DB), dimethylamine salt	1	
	Acenaphthene	1	
	Alachlor	1	
	Aldicarb	1	
	Aldicarb sulfone	1	
	Aldicarb sulfoxide	1	
	Aldrin	1	
	Atrazine	1	
	Bentazon, sodium salt	1	
	Bromacil	1	
	Butachlor	1	
	Carbaryl	1	
	Carbofuran	1	
	Carbon disulfide	2	
	Chlordane	1	
	Chlorothalonil	1	
	Dalapon	1	
	DBCP	1	
	Diazinon	1	
	Dicamba	1	
	Dieldrin	1	
	Dimethoate	1	
	Dinoseb	1	
	Diquat dibromide	1	
	Endothall	1	
	Endrin	1	
	Ethylene dibromide	1	
	Glyphosate, isopropylamine salt	1	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	1	
	Lindane (gamma-BHC)	1	
	Methiocarb	1	
	Methomyl	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Placer	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Methoxychlor	1	
	Methyl bromide (bromomethane)	5	
	Metolachlor	1	
	Metribuzin	1	
	Molinate	1	
	Naphthalene	3	
	Ortho-dichlorobenzene	7	
	Oxamyl	1	
	Picloram	1	
	Prometryn	1	
	Propachlor	1	
	Propoxur	1	
	Simazine	1	
	Thiobencarb	1	
	Toxaphene	1	
	Xylene	5	

Plumas	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,2,4-Trichlorobenzene	2	
	1,2-D + 1,3-D + C-3 compounds	2	
	1,2-Dichloropropane (propylene dichloride)	2	
	1,3-Dichloropropene (1,3-D, telone)	1	
	Methyl bromide (bromomethane)	2	
	Naphthalene	1	
	Ortho-dichlorobenzene	2	
	Xylene	2	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Riverside	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,2,4-Trichlorobenzene	166	
	1,2-D + 1,3-D + C-3 compounds	136	
	1,2-Dichloropropane (propylene dichloride)	166	
	1,3-Dichloropropene (1,3-D, telone)	82	
	2,3,7,8-TCDD (dioxin)	31	
	2,4,5-TP (silvex)	40	
	2,4-D	40	
	3-Hydroxycarbofuran	34	
	4(2,4-DB), dimethylamine salt	15	
	Acifluorfen, sodium salt	15	
	Alachlor	82	
	Aldicarb	34	
	Aldicarb sulfone	34	
	Aldicarb sulfoxide	34	
	Aldrin	28	
	Atrazine	119	
	Bentazon, sodium salt	40	
	BHC (other than gamma isomer)	15	
	Bromacil	20	
	Butachlor	34	
	Carbaryl	34	
	Carbofuran	39	
	Chlordane	36	
	Chlorothalonil	15	
	Chlorpropham	15	
	Dacthal (chlorthal-dimethyl / DCPA)	15	1
	Dacthal degradates (chlorthal-dimethyl acid degradates)	9	
	Dalapon	40	
	DBCP	70	11
	DDD	15	
	DDE	15	
	DDT	15	
	Diazinon	34	
	Dicamba	35	
	Dichlorprop, butoxyethanol ester	15	
	Dieldrin	26	
	Dimethoate	20	
	Dinoseb	40	
	Diphenamid	15	
	Diquat dibromide	24	
	Diuron	2	
	Endosulfan	15	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Riverside	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Endosulfan sulfate	15	
	Endothall	38	
	Endrin	38	
	Endrin aldehyde	15	
	Ethylene dibromide	69	
	Glyphosate, isopropylamine salt	39	
	Heptachlor	36	
	Heptachlor epoxide	36	
	Hexachlorobenzene	45	
	Lindane (gamma-BHC)	38	
	Methiocarb	25	
	Methomyl	34	
	Methoxychlor	38	
	Methyl bromide (bromomethane)	136	
	Metolachlor	34	
	Metribuzin	34	
	Molinate	89	
	Naphthalene	136	
	Ortho-dichlorobenzene	166	
	Oxamyl	39	
	Paraquat dichloride	8	
	Picloram	40	
	Prometon	15	
	Prometryn	29	
	Propachlor	30	
	Propoxur	25	
	Simazine	119	
	Terbacil	15	
	Thiobencarb	89	
	Toxaphene	36	
	Trifluralin	15	
	Xylene	166	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Sacramento	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	112	
	1,2-D + 1,3-D + C-3 compounds	36	
	1,2-Dichloropropane (propylene dichloride)	112	
	1,3-Dichloropropene (1,3-D, telone)	87	
	2,3,7,8-TCDD (dioxin)	2	
	2,4,5-T	4	
	2,4,5-TP (silvex)	9	
	2,4-D	9	
	3-Hydroxycarbofuran	9	
	Alachlor	9	
	Aldicarb	9	
	Aldicarb sulfone	9	
	Aldicarb sulfoxide	9	
	Aldrin	9	
	Atrazine	15	
	Bentazon, sodium salt	9	
	Bromacil	9	
	Butachlor	9	
	Carbaryl	9	
	Carbofuran	9	
	Carbon disulfide	8	
	Chlordane	9	
	Chlorothalonil	4	
	Chlorthal-dimethyl acid degradates	5	
	Dalapon	9	
	DBCP	15	1
	Diazinon	9	
	Dicamba	9	
	Dieldrin	9	
	Dimethoate	9	
	Dinoseb	9	
	Diquat dibromide	9	
	Diuron	1	
	Endothall	9	
	Endrin	9	
	Ethylene dibromide	15	1
	Glyphosate, isopropylamine salt	9	
	Heptachlor	9	
	Heptachlor epoxide	9	
	Hexachlorobenzene	15	
	Lindane (gamma-BHC)	9	
	Methiocarb	1	
	Methomyl	9	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Sacramento	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Methoxychlor	9	
	Methyl bromide (bromomethane)	32	
	Metolachlor	9	
	Metribuzin	9	
	Molinate	15	
	Naphthalene	36	
	Ortho-dichlorobenzene	112	
	Oxamyl	9	
	Picloram	9	
	Prometryn	1	
	Propachlor	9	
	Propoxur	1	
	Simazine	15	
	Thiobencarb	21	
	Toxaphene	9	
	Trifluralin	3	
	Xylene	112	

San Benito	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,3-Dichloropropene (1,3-D, telone)	7	
	1,2,4-Trichlorobenzene	16	
	1,2-D + 1,3-D + C-3 compounds	16	
	1,2-Dichloropropane (propylene dichloride)	16	
	2,4,5-T	17	
	2,4,5-TP (silvex)	17	
	2,4-D	17	
	3-Hydroxycarbofuran	18	
	Deethyl-simazine or deisopropyl-atrazine (ACET)	2	
	Acrylonitrile	1	
	Alachlor	17	
	Aldicarb	17	
	Aldicarb sulfone	17	
	Aldicarb sulfoxide	18	
	Aldrin	2	
	Atrazine	19	
	Bentazon, sodium salt	17	
	Bromacil	19	
	Butachlor	17	
	Carbaryl	18	
	Carbofuran	17	
	Carbon disulfide	1	
	Chlordane	1	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Benito	Chemical	Wells Sampled	Wells with Detections
	Chlorothalonil	2	
	Chlorthal-dimethyl acid degradates	1	
	Dalapon	17	
	Deethyl-atrazine (DEA)	2	
	Desmethylnorflurazon	2	
	Diaminochlorotriazine (DACT)	2	
	Diazinon	16	
	Dicamba	17	
	Dieldrin	2	
	Dimethoate	17	
	Dinoseb	17	
	Diquat dibromide	18	
	Diuron	3	
	Endothall	1	
	Endrin	1	
	Fonofos (dyfonate)	1	
	Glyphosate, isopropylamine salt	1	
	Heptachlor	1	
	Heptachlor epoxide	1	
	Hexachlorobenzene	1	
	Hexazinone	2	
	Imidacloprid	2	
	Imidacloprid guanidine	2	
	Imidacloprid olefin	2	
	Imidacloprid olefinic-guanidine	2	
	Imidacloprid urea	2	
	Lindane (gamma-BHC)	1	
	Methiocarb	1	
	Methomyl	18	
	Methoxychlor	1	
	Methyl bromide (bromomethane)	16	
	Metolachlor	17	
	Metribuzin	17	
	Molinate	17	
	Naphthalene	16	
	Norflurazon	2	
	Ortho-dichlorobenzene	16	
	Oxamyl	17	
	Picloram	17	
	Prometon	2	
	Prometryn	1	
	Propachlor	17	
	Propoxur	1	
	Simazine	19	
	Tebuthiuron	2	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Benito	Chemical	Wells Sampled	Wells with Detections
	Tebuthiuron degradate 104 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-	2	
	Tebuthiuron degradate 106 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea)	2	
	Tebuthiuron degradate 107 (2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole)	2	
	Tebuthiuron degradate 108 (2-Dimethylethyl-5-amino-1,3,4-thiadiazole)	2	
	Terbacil	1	
	Thiobencarb	17	
	Toxaphene	1	
	Trifluralin	1	
	Xylene	16	

San Bernardino	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	254	
	1,2-D + 1,3-D + C-3 compounds	194	
	1,2-Dichloropropane (propylene dichloride)	254	
	1,3-Dichloropropene (1,3-D, telone)	105	
	2,3,7,8-TCDD (dioxin)	117	
	2,4,5-T	26	
	2,4,5-TP (silvex)	114	
	2,4-D	114	
	3-Hydroxycarbofuran	91	
	4(2,4-DB), dimethylamine salt	38	
	Acetochlor	5	
	Acifluorfen, sodium salt	20	
	Acrylonitrile	2	
	Alachlor	127	
	Aldicarb	91	
	Aldicarb sulfone	91	
	Aldicarb sulfoxide	91	
	Aldrin	103	
	Ametryne	24	
	Atrazine	134	
	Bentazon, sodium salt	114	
	BHC (other than gamma isomer)	20	
	Bromacil	38	
	Butachlor	81	
	Butylate	24	
	Carbaryl	91	
	Carbofuran	112	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Bernardino	Chemical	Wells Sampled	Wells with Detections
	Carbon disulfide	27	
	Chlordane	115	
	Chloroneb	24	
	Chlorothalonil	20	
	Chlorpropham	34	
	Chlorpyrifos	24	
	Cycloate	24	
	Dacthal (chlorthal-dimethyl / DCPA)	20	
	Dacthal degradates (chlorthal-dimethyl acid degradates)	50	1
	Dalapon	114	
	DBCP	235	34
	DDD	20	
	DDE	20	
	DDT	20	
	Diazinon	57	
	Dicamba	93	
	Dichlorprop, butoxyethanol ester	20	
	Dieldrin	90	
	Dimethoate	38	
	Dinoseb	114	
	Diphenamid	34	
	Diquat dibromide	114	
	Disulfoton	8	
	Diuron	1	
	Endosulfan	20	
	Endosulfan sulfate	20	
	Endothall	112	
	Endrin	128	
	Endrin aldehyde	20	
	EPTC	1	
	Ethylene dibromide	225	
	Glyphosate, isopropylamine salt	112	
	Heptachlor	115	
	Heptachlor epoxide	115	
	Hexachlorobenzene	135	
	Lindane (gamma-BHC)	121	
	Methiocarb	42	
	Methomyl	91	
	Methoxychlor	128	
	Methyl bromide (bromomethane)	194	
	Metolachlor	81	
	Metribuzin	81	
	Molinate	134	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Bernardino	Chemical	Wells Sampled	Wells with Detections
	Naphthalene	194	
	Napropamide	24	
	Ortho-dichlorobenzene	254	
	Oxamyl	112	
	Paraquat dichloride	29	
	Permethrin	1	
	Picloram	114	
	Prometon	20	
	Prometryn	63	
	Propachlor	86	
	Propazine	24	
	Propoxur	42	
	Simazine	142	
	Simetryn	24	
	Terbacil	15	
	Terbutryn	1	
	Thiobencarb	134	
	Toxaphene	115	
	Triadimefon	24	
	Trifluralin	44	
	Vernolate	24	
	Xylene	256	

San Diego	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	40	
	1,2-D + 1,3-D + C-3 compounds	31	
	1,2-Dichloropropane (propylene dichloride)	40	1
	1,3-Dichloropropene (1,3-D, telone)	10	
	2,3,7,8-TCDD (dioxin)	21	
	2,4,5-T	3	
	2,4,5-TP (silvex)	22	
	2,4-D	22	
	3-Hydroxycarbofuran	19	
	4(2,4-DB), dimethylamine salt	11	
	Acetochlor	1	
	Acifluorfen, sodium salt	10	
	Alachlor	25	
	Aldicarb	19	
	Aldicarb sulfone	19	
	Aldicarb sulfoxide	19	
	Aldrin	17	
	Ametryne	11	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Diego	Chemical	Wells Sampled	Wells with Detections
	Atrazine	36	
	Bentazon, sodium salt	22	
	BHC (other than gamma isomer)	11	
	Bromacil	12	
	Butachlor	14	
	Butylate	11	
	Carbaryl	19	
	Carbofuran	22	
	Carbon disulfide	5	
	Chlordane	24	
	Chloroneb	11	
	Chlorothalonil	8	
	Chlorpropham	11	
	Chlorpyrifos	11	
	Cycloate	11	
	Dacthal (chlorthal-dimethyl / DCPA)	8	
	Dacthal degradates (chlorthal-dimethyl acid degradates)	7	
	Dalapon	22	
	DBCP	34	
	DDD	11	
	DDE	12	
	DDT	11	
	Diazinon	14	
	Dicamba	17	
	Dichlorprop, butoxyethanol ester	11	
	Dieldrin	17	
	Dimethoate	1	
	Dinoseb	22	
	Diphenamid	11	
	Diquat dibromide	13	
	Endosulfan	11	
	Endosulfan sulfate	11	
	Endothall	13	
	Endrin	24	
	Endrin aldehyde	11	
	EPTC	1	
	Ethylene dibromide	34	
	Glyphosate, isopropylamine salt	22	
	Heptachlor	24	
	Heptachlor epoxide	24	
	Hexachlorobenzene	34	
	Lindane (gamma-BHC)	24	
	Methiocarb	14	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Diego	Chemical	Wells Sampled	Wells with Detections
	Methomyl	19	
	Methoxychlor	24	
	Methyl bromide (bromomethane)	31	
	Metolachlor	14	
	Metribuzin	14	
	Molinate	35	
	Naphthalene	31	
	Napropamide	11	
	Ortho-dichlorobenzene	40	
	Oxamyl	22	
	Permethrin	11	
	Picloram	22	
	Prometryn	13	
	Propachlor	14	
	Propazine	11	
	Propoxur	12	
	Simazine	36	
	Simetryn	11	
	Terbacil	12	
	Terbutryn	11	
	Thiobencarb	35	
	Toxaphene	24	
	Triadimefon	11	
	Trifluralin	11	
	Vernolate	11	
	Xylene	40	

San Francisco	Chemical	Wells Sampled	Wells with Detections
	NOT SAMPLED IN CURRENT YEAR		

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Joaquin	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	43	
	1,2-D + 1,3-D + C-3 compounds	39	
	1,2-Dichloropropane (propylene dichloride)	43	2
	1,3-Dichloropropene (1,3-D, telone)	24	
	2,4,5-TP (silvex)	8	
	2,4-D	8	
	3-Hydroxycarbofuran	8	
	Alachlor	8	
	Aldicarb	8	
	Aldicarb sulfone	8	
	Aldicarb sulfoxide	8	
	Aldrin	8	
	Atrazine	8	
	Bentazon, sodium salt	8	
	Bromacil	8	
	Butachlor	8	
	Carbaryl	8	
	Carbofuran	8	
	Chlordane	8	
	Chlorothalonil	8	
	Dalapon	8	
	DBCP	96	19
	Diazinon	8	
	Dicamba	8	
	Dichlorprop, butoxyethanol ester	8	
	Dieldrin	8	
	Dimethoate	11	
	Dinoseb	8	
	Diquat dibromide	8	
	Endothall	8	
	Endrin	8	
	EPTC	8	
	Ethylene dibromide	91	1
	Heptachlor	8	
	Heptachlor epoxide	8	
	Hexachlorobenzene	8	
	Lindane (gamma-BHC)	8	
	Methiocarb	8	
	Methomyl	8	
	Methoxychlor	8	
	Methyl bromide (bromomethane)	28	
	Metolachlor	8	
	Metribuzin	8	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Joaquin	Chemical	Wells Sampled	Wells with Detections
	Molinate	8	
	Naphthalene	29	
	Ortho-dichlorobenzene	43	
	Oxamyl	8	
	Picloram	8	
	Prometon	8	
	Prometryn	8	
	Propachlor	8	
	Propoxur	8	
	Simazine	8	
	Terbacil	8	
	Thiobencarb	8	
	Toxaphene	8	
	Trifluralin	8	
	Xylene	43	

San Luis Obispo	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	43	
	1,2-D + 1,3-D + C-3 compounds	20	
	1,2-Dichloropropane (propylene dichloride)	43	
	1,3-Dichloropropene (1,3-D, telone)	22	
	Alachlor	8	
	Atrazine	23	
	Bromacil	11	
	Butachlor	8	
	DBCP	12	
	Deethyl-atrazine (DEA)	3	
	Deethyl-simazine or deisopropyl-atrazine (ACET)	3	
	Desmethylnorflurazon	3	
	Diaminochlorotriazine (DACT)	3	
	Diazinon	3	
	Dimethoate	8	
	Diuron	3	
	Ethylene dibromide	12	1
	Hexazinone	3	
	Imidacloprid	3	
	Imidacloprid guanidine	3	
	Imidacloprid olefin	3	
	Imidacloprid olefinic-guanidine	3	
	Imidacloprid urea	3	
	Methyl bromide (bromomethane)	20	3
	Metolachlor	8	
	Metribuzin	8	

San Luis Obispo	Chemical	Wells Sampled	Wells with Detections
	Molinate	8	
	Naphthalene	20	
	Norflurazon	3	
	Ortho-dichlorobenzene	43	
	Prometon	3	
	Prometryn	3	
	Propachlor	8	
	Simazine	23	
	Tebuthiuron	3	
	Tebuthiuron degradate 104 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea)	3	
	Tebuthiuron degradate 106 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea)	3	
	Tebuthiuron degradate 107 (2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole)	3	
	Tebuthiuron degradate 108 (2-Dimethylethyl-5-amino-1,3,4-thiadiazole)	3	
	Thiobencarb	8	
	Xylene	43	

San Mateo	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	20	
	1,2-D + 1,3-D + C-3 compounds	16	
	1,2-Dichloropropane (propylene dichloride)	20	2
	1,3-Dichloropropene (1,3-D, telone)	14	1
	2,3,7,8-TCDD (dioxin)	7	
	2,4,5-T	9	
	2,4,5-TP (silvex)	12	
	2,4-D	12	
	3-Hydroxycarbofuran	12	
	Alachlor	11	
	Aldicarb	12	
	Aldicarb sulfone	12	
	Aldicarb sulfoxide	12	
	Aldrin	9	
	Atrazine	11	
	Bentazon, sodium salt	12	
	Bromacil	9	
	Butachlor	9	
	Carbaryl	12	
	Carbofuran	12	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

San Mateo	Chemical	Wells Sampled	Wells with Detections
	Carbon disulfide	1	
	Chlordane	11	
	Chlorothalonil	9	
	Dalapon	12	
	DBCP	13	
	Dacthal degradates (chlorthal-dimethyl acid degradates)	3	
	Diazinon	9	
	Dicamba	12	
	Dieldrin	9	
	Dimethoate	9	
	Dinoseb	12	
	Diquat dibromide	12	
	Diuron	5	
	Endothall	12	
	Endrin	11	
	Ethylene dibromide	12	
	Glyphosate, isopropylamine salt	12	
	Heptachlor	11	
	Heptachlor epoxide	11	
	Hexachlorobenzene	11	
	Lindane (gamma-BHC)	11	
	Methiocarb	3	
	Methomyl	12	
	Methoxychlor	11	
	Methyl bromide (bromomethane)	10	
	Metolachlor	9	
	Metribuzin	9	
	Molinate	11	
	Naphthalene	16	
	Ortho-dichlorobenzene	20	
	Oxamyl	12	
	Paraquat dichloride	3	
	Picloram	12	
	Propachlor	9	
	Propoxur	3	
	Simazine	11	
	Thiobencarb	11	
	Toxaphene	11	
	Trifluralin	9	
	Xylene	20	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Santa Barbara	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	33	
	1,2-D + 1,3-D + C-3 compounds	18	
	1,2-Dichloropropane (propylene dichloride)	33	
	1,3-Dichloropropene (1,3-D, telone)	20	
	2,3,7,8-TCDD (dioxin)	9	
	2,4,5-TP (silvex)	10	
	2,4-D	10	
	3-Hydroxycarbofuran	9	
	Acetochlor	3	
	Alachlor	17	
	Aldicarb	9	
	Aldicarb sulfone	9	
	Aldicarb sulfoxide	9	
	Aldrin	9	
	Atrazine	35	
	Bentazon, sodium salt	10	
	Bromacil	17	
	Butachlor	8	
	Carbaryl	9	
	Carbofuran	9	
	Chlordane	10	
	Dalapon	10	
	DBCP	15	
	Dacthal degradates (chlorthal-dimethyl acid degradates)	9	
	Deethyl-atrazine (DEA)	9	
	Deethyl-simazine or deisopropyl-atrazine (ACET)	9	
	Desmethylnorflurazon	9	
	Diaminochlorotriazine (DACT)	9	
	Diazinon	4	
	Dicamba	9	
	Dieldrin	9	
	Dimethoate	8	
	Dinoseb	10	
	Diquat dibromide	9	
	Diuron	9	
	Endothall	9	
	Endrin	10	
	Ethylene dibromide	15	
	Glyphosate, isopropylamine salt	9	
	Heptachlor	10	
	Heptachlor epoxide	10	
	Hexachlorobenzene	10	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Santa Barbara	Chemical	Wells Sampled	Wells with Detections
	Hexazinone	9	
	Imidacloprid	9	
	Imidacloprid guanidine	9	
	Imidacloprid olefin	9	
	Imidacloprid olefinic-guanidine	9	
	Imidacloprid urea	9	
	Lindane (gamma-BHC)	10	
	Methomyl	9	
	Methoxychlor	10	
	Methyl bromide (bromomethane)	18	
	Metolachlor	8	
	Metribuzin	8	
	Molinate	17	
	Naphthalene	18	
	Norflurazon	9	
	Ortho-dichlorobenzene	33	
	Oxamyl	9	
	Picloram	10	
	Prometon	9	
	Prometryn	1	
	Propachlor	8	
	Simazine	35	
	Tebuthiuron	9	
	Tebuthiuron degradate 104 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea)	9	
	Tebuthiuron degradate 106 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea)	9	
	Tebuthiuron degradate 107 (2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole)	9	
	Tebuthiuron degradate 108 (2-Dimethylethyl-5-amino-1,3,4-thiadiazole)	9	
	Terbacil	3	
	Thiobencarb	17	
	Toxaphene	10	
	Xylene	33	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Santa **Clara**	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,2,4-Trichlorobenzene	129	
	1,2-D + 1,3-D + C-3 compounds	124	
	1,2-Dichloropropane (propylene dichloride)	129	
	1,3-Dichloropropene (1,3-D, telone)	17	
	2,3,7,8-TCDD (dioxin)	55	
	2,4,5-T	33	
	2,4,5-TP (silvex)	161	
	2,4-D	163	
	3-Hydroxycarbofuran	133	
	Acrylonitrile	7	
	Alachlor	159	
	Aldicarb	133	
	Aldicarb sulfone	133	
	Aldicarb sulfoxide	133	
	Aldrin	132	
	Atrazine	160	
	Bentazon, sodium salt	159	
	Bromacil	141	
	Butachlor	141	
	Carbaryl	133	
	Carbofuran	149	
	Carbon disulfide	10	
	Chlordane	148	
	Chlorothalonil	20	
	Dacthal degradates (chlorthal-dimethyl acid degradates)	112	
	Dalapon	161	
	DBCP	148	
	Diazinon	141	
	Dicamba	145	
	Dieldrin	132	
	Dimethoate	141	
	Dinoseb	161	
	Diquat dibromide	148	
	Diuron	20	
	Endothall	146	
	Endrin	148	
	Ethylene dibromide	148	
	Glyphosate, isopropylamine salt	148	
	Heptachlor	148	
	Heptachlor epoxide	148	
	Hexachlorobenzene	147	
	Lindane (gamma-BHC)	148	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Santa Clara	Chemical	Wells Sampled	Wells with Detections
	Methomyl	129	
	Methoxychlor	148	
	Methyl bromide (bromomethane)	54	
	Metolachlor	141	
	Metribuzin	141	
	Molinate	158	
	Naphthalene	120	
	Ortho-dichlorobenzene	129	
	Oxamyl	149	
	Picloram	161	
	Propachlor	141	
	Simazine	160	
	Thiobencarb	158	
	Toxaphene	148	
	Trifluralin	20	
	Xylene	129	

Santa Cruz	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	37	
	1,2-D + 1,3-D + C-3 compounds	33	
	1,2-Dichloropropane (propylene dichloride)	37	
	1,3-Dichloropropene (1,3-D, telone)	21	
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-T	4	
	2,4,5-TP (silvex)	7	
	2,4-D	20	
	3-Hydroxycarbofuran	10	
	4(2,4-DB), dimethylamine salt	2	
	Acifluorfen, sodium salt	2	
	Alachlor	15	
	Aldicarb	10	
	Aldicarb sulfone	10	
	Aldicarb sulfoxide	10	
	Aldrin	5	
	Atrazine	32	
	Bentazon, sodium salt	10	
	Bromacil	9	
	Butachlor	9	
	Carbaryl	10	
	Carbofuran	13	
	Carbon disulfide	14	1
	Chlordane	4	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Santa **Cruz**	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Dacthal degradates (chlorthal-dimethyl acid degradates)	5	
	Dalapon	7	
	DBCP	19	
	Diazinon	6	
	Dicamba	7	
	Dichlorprop, butoxyethanol ester	2	
	Dieldrin	1	
	Dimethoate	9	
	Dinoseb	7	
	Diquat dibromide	23	
	Endothall	2	
	Endrin	8	
	Ethylene dibromide	14	
	Glyphosate, isopropylamine salt	1	
	Heptachlor	4	
	Heptachlor epoxide	4	
	Hexachlorobenzene	7	
	Lindane (gamma-BHC)	8	
	Methiocarb	6	
	Methomyl	10	
	Methoxychlor	8	
	Methyl bromide (bromomethane)	33	
	Metolachlor	9	
	Metribuzin	9	
	Molinate	11	
	Naphthalene	33	
	Ortho-dichlorobenzene	37	
	Oxamyl	10	
	Paraquat dichloride	1	
	Picloram	7	
	Propachlor	9	
	Propoxur	4	
	Simazine	32	
	Thiobencarb	11	
	Toxaphene	3	
	Xylene	37	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Shasta	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	21	
	1,2-D + 1,3-D + C-3 compounds	20	
	1,2-Dichloropropane (propylene dichloride)	21	
	1,3-Dichloropropene (1,3-D, telone)	1	
	Atrazine	1	
	Hexachlorobenzene	1	
	Methyl bromide (bromomethane)	20	
	Molinate	1	
	Ortho-dichlorobenzene	21	
	Thiobencarb	1	
	Xylene	21	

Sierra	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	3	
	1,2-D + 1,3-D + C-3 compounds	1	
	1,2-Dichloropropane (propylene dichloride)	3	
	Methyl bromide (bromomethane)	1	
	Naphthalene	1	
	Ortho-dichlorobenzene	3	
	Xylene	2	

Siskiyou	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	3	
	1,2-D + 1,3-D + C-3 compounds	3	
	1,2-Dichloropropane (propylene dichloride)	3	
	Methyl bromide (bromomethane)	3	
	Ortho-dichlorobenzene	3	
	Xylene	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Solano	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	21	
	1,2-D + 1,3-D + C-3 compounds	22	
	1,2-Dichloropropane (propylene dichloride)	22	
	1,3-Dichloropropene (1,3-D, telone)	2	
	2,4,5-T	2	
	2,4,5-TP (silvex)	17	
	2,4-D	17	
	3-Hydroxycarbofuran	17	
	Alachlor	17	
	Aldicarb	16	
	Aldicarb sulfone	16	
	Aldicarb sulfoxide	16	
	Aldrin	18	
	Atrazine	17	
	Bentazon, sodium salt	17	
	Bromacil	16	
	Butachlor	16	
	Carbaryl	17	
	Carbofuran	17	
	Chlordane	18	
	Chlorothalonil	2	
	Dacthal degradates (chlorthal-dimethyl acid degradates)	14	
	Dalapon	17	
	DBCP	17	
	Diazinon	16	
	Dicamba	16	
	Dieldrin	18	
	Dimethoate	16	
	Dinoseb	17	
	Diquat dibromide	17	
	Endothall	17	
	Endrin	18	
	Ethylene dibromide	17	
	Glyphosate, isopropylamine salt	16	
	Heptachlor	18	
	Heptachlor epoxide	18	
	Hexachlorobenzene	18	
	Lindane (gamma-BHC)	18	
	Methomyl	17	
	Methoxychlor	18	
	Methyl bromide (bromomethane)	18	
	Metolachlor	16	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Solano	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Metribuzin	16	
	Molinate	17	
	Naphthalene	21	
	Ortho-dichlorobenzene	22	
	Oxamyl	17	
	Picloram	17	
	Prometryn	2	
	Propachlor	16	
	Simazine	17	
	Thiobencarb	17	
	Toxaphene	18	
	Trifluralin	2	
	Xylene	22	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Sonoma	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,2,4-Trichlorobenzene	41	
	1,2-D + 1,3-D + C-3 compounds	39	
	1,2-Dichloropropane (propylene dichloride)	39	
	1,3-Dichloropropene (1,3-D, telone)	8	
	2,3,7,8-TCDD (dioxin)	8	
	2,4,5-T	53	
	2,4,5-TP (silvex)	59	
	2,4-D	59	
	3-Hydroxycarbofuran	44	
	4(2,4-DB), dimethylamine salt	38	
	Acifluorfen, sodium salt	6	
	Acrylonitrile	8	
	Alachlor	42	
	Aldicarb	44	
	Aldicarb sulfone	44	
	Aldicarb sulfoxide	44	
	Aldrin	27	
	Atrazine	65	
	Bentazon, sodium salt	59	
	BHC (other than gamma isomer)	6	
	Bromacil	30	
	Butachlor	30	
	Carbaryl	44	
	Carbofuran	45	
	Carbon disulfide	8	
	Chlordane	28	
	Chlorobenzilate	6	
	Chloroneb	6	
	Chlorothalonil	10	
	Dacthal degradates (chlorthal-dimethyl acid degradates)	12	
	Dalapon	61	
	DBCP	24	4
	DDD	6	
	DDE	6	
	DDT	6	
	Diazinon	24	
	Dicamba	59	
	Dichlorprop, butoxyethanol ester	6	
	Dieldrin	27	
	Dimethoate	30	
	Dinoseb	60	
	Diquat dibromide	54	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Sonoma	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Diuron	6	
	Endosulfan	6	
	Endosulfan sulfate	6	
	Endothall	55	
	Endrin	28	
	Endrin aldehyde	6	
	Ethylene dibromide	38	
	Glyphosate, isopropylamine salt	8	
	Heptachlor	28	
	Heptachlor epoxide	28	
	Hexachlorobenzene	23	
	Lindane (gamma-BHC)	28	
	Methiocarb	23	
	Methomyl	44	
	Methoxychlor	28	
	Methyl bromide (bromomethane)	37	
	Metolachlor	30	
	Metribuzin	30	
	Molinate	30	
	Naphthalene	14	
	Ortho-dichlorobenzene	39	
	Oxamyl	54	
	Permethrin	6	
	Permethrin, other related compounds	6	
	Picloram	60	
	Prometryn	21	
	Propachlor	30	
	Propoxur	23	
	Simazine	65	
	Thiobencarb	30	
	Toxaphene	28	
	Trifluralin	10	
	Xylene	39	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Stanislaus	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,2,4-Trichlorobenzene	107	
	1,2-D + 1,3-D + C-3 compounds	107	
	1,2-Dichloropropane (propylene dichloride)	107	
	1,3-Dichloropropene (1,3-D, telone)	93	
	2,3,7,8-TCDD (dioxin)	1	
	2,4,5-T	13	
	2,4,5-TP (silvex)	13	
	2,4-D	13	
	3-Hydroxycarbofuran	11	
	4(2,4-DB), dimethylamine salt	3	
	Acenaphthene	1	
	Alachlor	19	
	Aldicarb	11	
	Aldicarb sulfone	11	
	Aldicarb sulfoxide	11	
	Aldrin	13	
	Atraton	2	
	Atrazine	21	
	Bentazon, sodium salt	13	
	BHC (other than gamma isomer)	2	
	Bromacil	19	
	Butachlor	17	
	Carbaryl	11	
	Carbofuran	11	
	Carbon disulfide	3	
	Chlordane	13	
	Chlorothalonil	11	
	Dalapon	13	
	DBCP	79	23
	DDD	2	
	DDE	2	
	DDT	2	
	Diazinon	19	
	Dicamba	13	
	Dichlorprop, butoxyethanol ester	2	
	Dieldrin	13	
	Dimethoate	24	
	Dinoseb	13	
	Diquat dibromide	11	
	Endosulfan	2	
	Endosulfan sulfate	2	
	Endothall	11	
	Endrin	13	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Stanislaus	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Endrin aldehyde	2	
	Ethylene dibromide	77	
	Glyphosate, isopropylamine salt	11	
	Heptachlor	13	
	Heptachlor epoxide	13	
	Hexachlorobenzene	13	
	Lindane (gamma-BHC)	13	
	MCPA, dimethylamine salt	2	
	MCPP (2-(4-chloro-2-methylphenoxy)propionic acid)	2	
	Methiocarb	1	
	Methomyl	11	
	Methoxychlor	13	
	Methyl bromide (bromomethane)	107	
	Metolachlor	19	
	Metribuzin	19	
	Molinate	19	
	Naphthalene	99	
	Ortho-dichlorobenzene	107	
	Oxamyl	11	
	Picloram	11	
	Prometon	2	
	Prometryn	3	
	Propachlor	17	
	Propoxur	1	
	Secbumeton	2	
	Simazine	21	
	Terbutryn	2	
	Thiobencarb	19	
	Toxaphene	13	
	Trifluralin	10	
	Xylene	107	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Sutter	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	2	
	1,2-D + 1,3-D + C-3 compounds	1	
	1,2-Dichloropropane (propylene dichloride)	2	
	2,4,5-T	1	
	2,4,5-TP (silvex)	3	
	2,4-D	3	
	3-Hydroxycarbofuran	3	
	4(2,4-DB), dimethylamine salt	1	
	Acifluorfen, sodium salt	1	
	Alachlor	3	
	Aldicarb	3	
	Aldicarb sulfone	3	
	Aldicarb sulfoxide	3	
	Atrazine	3	
	Bentazon, sodium salt	2	
	Bromacil	3	
	Butachlor	3	
	Carbaryl	3	
	Carbofuran	3	
	Chlorpropham	2	
	Dacthal (chlorthal-dimethyl / DCPA)	1	
	Dalapon	3	
	Diazinon	3	
	Dicamba	3	
	Dichlorprop, butoxyethanol ester	1	
	Dimethoate	3	
	Dinoseb	3	
	Diphenamid	2	
	Disulfoton	1	
	Glyphosate, isopropylamine salt	3	
	Methiocarb	3	
	Methomyl	3	
	Methyl bromide (bromomethane)	1	
	Metolachlor	3	
	Metribuzin	3	
	Molinate	3	
	Naphthalene	1	
	Ortho-dichlorobenzene	2	
	Oxamyl	3	
	Picloram	3	
	Prometon	3	
	Prometryn	3	
	Propoxur	3	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Sutter	Chemical	Wells Sampled	Wells with Detections
	Simazine	3	
	Terbacil	2	
	Thiobencarb	3	
	Xylene	1	

Tehama	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	4	
	1,2-D + 1,3-D + C-3 compounds	4	
	1,2-Dichloropropane (propylene dichloride)	4	
	1,3-Dichloropropene (1,3-D, telone)	3	
	Methyl bromide (bromomethane)	5	
	Naphthalene	3	
	Ortho-dichlorobenzene	4	
	Xylene	4	

Trinity	Chemical	Wells Sampled	Wells with Detections
	NOT SAMPLED IN CURRENT YEAR		

Tulare	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	90	
	1,2-D + 1,3-D + C-3 compounds	90	
	1,2-Dichloropropane (propylene dichloride)	90	
	1,3-Dichloropropene (1,3-D, telone)	51	
	2,4,5-T	9	
	2,4,5-TP (silvex)	9	
	2,4-D	9	
	3-Hydroxycarbofuran	9	
	Alachlor	37	
	Aldicarb	9	
	Aldicarb sulfone	9	
	Aldicarb sulfoxide	9	
	Aldrin	16	
	Atraton	1	
	Atrazine	50	1
	Bentazon, sodium salt	9	
	BHC (other than gamma isomer)	1	
	Bromacil	46	9
	Butachlor	26	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Tulare	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Carbaryl	9	
	Carbofuran	9	
	Carbon disulfide	12	
	Chlordane	19	
	Chlorothalonil	16	
	Dalapon	9	
	DBCP	147	34
	Deethyl-atrazine (DEA)	19	5
	Deethyl-simazine or deisopropyl-atrazine (ACET)	19	16
	Desmethylnorflurazon	19	8
	Diaminochlorotriazine (DACT)	19	16
	Diazinon	18	
	Dicamba	9	
	Dieldrin	16	
	Dimethoate	27	
	Dinoseb	9	
	Diquat dibromide	9	
	Diuron	23	11
	Endothall	9	
	Endrin	19	
	Ethylene dibromide	141	
	Glyphosate, isopropylamine salt	9	
	Heptachlor	19	
	Heptachlor epoxide	19	
	Hexachlorobenzene	20	
	Hexazinone	19	
	Lindane (gamma-BHC)	20	
	Methomyl	9	
	Methoxychlor	20	
	Methyl bromide (bromomethane)	65	
	Metolachlor	27	
	Metribuzin	27	
	Molinate	27	
	Naphthalene	90	
	Norflurazon	19	5
	Ortho-dichlorobenzene	90	
	Oxamyl	9	
	Picloram	9	
	Prometon	20	
	Prometryn	4	
	Propachlor	26	
	Secbumeton	1	
	Simazine	50	12
	Tebuthiuron	19	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Tulare	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Terbutryn	1	
	Thiobencarb	27	
	Toxaphene	19	
	Trifluralin	16	
	Xylene	90	

Tuolumne	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,2,4-Trichlorobenzene	6	
	1,2-D + 1,3-D + C-3 compounds	7	
	1,2-Dichloropropane (propylene dichloride)	7	
	1,3-Dichloropropene (1,3-D, telone)	1	
	Acetochlor	5	
	Alachlor	6	
	Atrazine	13	
	Bromacil	6	
	Butachlor	6	
	Chlorothalonil	5	
	Diazinon	6	
	Dimethoate	6	
	Methyl bromide (bromomethane)	7	
	Metolachlor	6	
	Metribuzin	6	
	Molinate	6	
	Naphthalene	2	
	Ortho-dichlorobenzene	7	
	Prometryn	5	
	Propachlor	1	
	Simazine	13	
	Terbacil	5	
	Thiobencarb	6	
	Xylene	7	

Ventura	*Chemical*	*Wells Sampled*	*Wells with Detections*
	1,2,4-Trichlorobenzene	57	
	1,2-D + 1,3-D + C-3 compounds	51	
	1,2-Dichloropropane (propylene dichloride)	57	
	1,3-Dichloropropene (1,3-D, telone)	56	
	2,3,7,8-TCDD (dioxin)	3	
	2,4,5-T	7	
	2,4,5-TP (silvex)	12	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Ventura	*Chemical*	*Wells Sampled*	*Wells with Detections*
	2,4-D	12	
	3-Hydroxycarbofuran	12	
	Alachlor	14	
	Aldicarb	12	
	Aldicarb sulfone	12	
	Aldicarb sulfoxide	12	
	Aldrin	12	
	Atrazine	19	
	Bentazon, sodium salt	12	
	Bromacil	15	
	Butachlor	14	
	Carbaryl	12	
	Carbofuran	12	
	Chlordane	12	
	Dalapon	12	
	DBCP	22	
	Deethyl-atrazine (DEA)	1	
	Deethyl-simazine or deisopropyl-atrazine (ACET)	1	
	Desmethylnorflurazon	1	
	Diaminochlorotriazine (DACT)	1	
	Diazinon	14	
	Dicamba	12	
	Dieldrin	12	
	Dimethoate	14	
	Dinoseb	12	
	Diquat dibromide	12	
	Diuron	8	
	Endothall	5	
	Endrin	12	
	Ethylene dibromide	22	
	Glyphosate, isopropylamine salt	11	
	Heptachlor	12	
	Heptachlor epoxide	12	
	Hexachlorobenzene	12	
	Hexazinone	1	
	Imidacloprid	1	
	Imidacloprid guanidine	1	
	Imidacloprid olefin	1	
	Imidacloprid olefinic-guanidine	1	
	Imidacloprid urea	1	
	Lindane (gamma-BHC)	12	
	Methomyl	12	
	Methoxychlor	12	
	Methyl bromide (bromomethane)	51	1

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Ventura	*Chemical*	*Wells Sampled*	*Wells with Detections*
	Metolachlor	14	
	Metribuzin	14	
	Molinate	14	
	Naphthalene	51	
	Norflurazon	1	
	Ortho-dichlorobenzene	57	3
	Oxamyl	12	
	Paraquat dichloride	5	
	Picloram	12	
	Prometon	1	
	Prometryn	14	
	Propachlor	14	
	Simazine	19	
	Tebuthiuron	1	
	Tebuthiuron degradate 104 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-N-methylurea)	1	
	Tebuthiuron degradate 106 (N-(5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl)-urea)	1	
	Tebuthiuron degradate 107 (2-Dimethylethyl-5-methylamino-1,3,4-thiadiazole)	1	
	Tebuthiuron degradate 108 (2-Dimethylethyl-5-amino-1,3,4-thiadiazole)	1	
	Thiobencarb	15	
	Toxaphene	12	
	Xylene	57	1

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Yolo	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	32	
	1,2-D + 1,3-D + C-3 compounds	32	
	1,2-Dichloropropane (propylene dichloride)	32	
	1,3-Dichloropropene (1,3-D, telone)	20	
	2,3,7,8-TCDD (dioxin)	9	
	2,4,5-T	9	
	2,4,5-TP (silvex)	9	
	2,4-D	9	
	3-Hydroxycarbofuran	9	
	Alachlor	9	
	Aldicarb	9	
	Aldicarb sulfone	9	
	Aldicarb sulfoxide	9	
	Aldrin	9	
	Atrazine	9	
	Bentazon, sodium salt	9	
	Bromacil	9	
	Butachlor	9	
	Carbaryl	9	
	Carbofuran	9	
	Chlordane	9	
	Chlorothalonil	9	
	Dalapon	9	
	DBCP	21	
	Diazinon	9	
	Dicamba	9	
	Dieldrin	9	
	Dimethoate	9	
	Dinoseb	9	
	Diquat dibromide	9	
	Endothall	9	
	Endrin	9	
	Ethylene dibromide	21	
	Glyphosate, isopropylamine salt	9	
	Heptachlor	9	
	Heptachlor epoxide	9	
	Hexachlorobenzene	9	
	Lindane (gamma-BHC)	9	
	Methomyl	9	
	Methoxychlor	9	
	Methyl bromide (bromomethane)	32	
	Metolachlor	9	
	Metribuzin	9	

Appendix E–Well Sampling Results Summarized by County and Pesticide, con't.

Yolo	Chemical	Wells Sampled	Wells with Detections
	Molinate	9	
	Naphthalene	32	
	Ortho-dichlorobenzene	32	
	Oxamyl	9	
	Picloram	9	
	Propachlor	9	
	Simazine	9	
	Thiobencarb	9	
	Toxaphene	9	
	Trifluralin	9	
	Xylene	32	

Yuba	Chemical	Wells Sampled	Wells with Detections
	1,2,4-Trichlorobenzene	15	
	1,2-D + 1,3-D + C-3 compounds	7	
	1,2-Dichloropropane (propylene dichloride)	15	
	1,3-Dichloropropene (1,3-D, telone)	1	
	Carbon disulfide	1	
	DBCP	1	
	Ethylene dibromide	1	
	Methyl bromide (bromomethane)	1	
	Naphthalene	7	
	Ortho-dichlorobenzene	15	

Glossary of Terms

TERM	*DEFINITION*
AB 1803	(1983) (Chapter 881, Statutes of 1983) A law that required the California Department of Public Health (CDPH) to evaluate each public water system to determine its potential for contamination. The systems were required to conduct specified water analyses and to report those results. Monitoring required by AB 1803 was completed in June 1989.
AB 2021	See "Pesticide Contamination Prevention Act."
AB 2701	AB 2701 (Chapter 644, Statutes of 2004) amended the Pesticide Contamination Prevention Act (PCPA) to require DPR to post specified information on sampling for pesticide residues in California ground water to its Web site. This law replaced the previous requirement that DPR submit the sampling information in a written report to the Legislature, the SWRCB and the CDPH.
Action level (AL)	ALs are published by the California Department of Public Health, Office of Drinking Water, and are based mainly on health affects. ALs are advisory to water suppliers. Although not legally enforceable, the majority of water suppliers have complied with action levels as though they were maximum contaminant levels.
Active ingredient	The chemical or chemicals in a pesticide formulation that are biologically active and which are capable, in themselves, of preventing, destroying, repelling or mitigating insects, fungi, rodents, weeds, or other pests.
Agricultural Commissioner	For each county in California, under supervision of DPR, the Agricultural Commissioner enforces the laws and regulations pertaining to agricultural and structural pest control and all other pesticide uses.
Agricultural use	The use of any pesticide or method or device for the control of plant or animal pests, or any other pests, or the use of any pesticide for the regulation of plant growth or defoliation of plants. It excludes the sale or use of pesticides in properly labeled packages or containers which are intended only for any of the following: home use, use in structural pest control, industrial or institutional use, the control of an animal pest under the written prescription of a veterinarian, local districts, or other public agencies which have entered into and operate under a cooperative agreement with the Department of Public Health pursuant to section 2426 of the Health and Safety Code. (Food and Agr. Code, section 11408) See also "legal agricultural use."

Glossary of Terms, con't.

TERM	*DEFINITION*
Analysis	For the well inventory data, it is the act of determining whether a substance is present in a water sample using laboratory methodology.
Aquifer	A geologic formation, group of formations, or part of a formation, that is water bearing and which transmits water in sufficient quantity to supply springs and pumping wells.
Chemigation	The application of pesticides through irrigation water, using irrigation techniques and equipment.
Degradation	With respect to pesticides, degradation is the breakdown of the parent chemical by the action of microbes, water, air, sunlight, or other agents into daughter (degradation) products that may undergo further degradation by similar processes. With respect to ground water quality, degradation refers to a reduction of water quality.
Detection	A well water sample in which the presence of a pesticide chemical is detected at or above the, minimum detection limit of the analytical instruments used for analysis of the compound under investigation. A detection may be designated as confirmed or unconfirmed.
Ground water protection areas (GWPA)	Areas of the state identified by DPR that are vulnerable to pesticide movement to ground water. GWPAs are identified by base meridian, township, range and section. Currently, there are leaching GWPAs and runoff GWPAs. GWPAs include all sections of land where pesticides have been found in ground water due to Legal agricultural use (see Pesticide Management Zones*)* and additional sections of land that contain similar characteristics of areas where pesticides have been found in ground water.
Groundwater Protection List (GWPL)	A list, required by the PCPA and established in 3CCR section 6800, of pesticides having the potential to pollute ground water. The GWPL is divided into two sublists. Sublist (a) is comprised of chemicals that have been detected in ground water as a result of legal agricultural use. Agricultural pesticides whose physicochemical properties exceed the specific numerical values (see def.) and that are labeled for soil application under certain conditions or are required or recommended to be followed by flood or furrow irrigation within 72 hours are placed on sublist (b) of the GWPL. Chemicals placed on the GWPL sublist (a) are subject to certain restrictions.

Glossary of Terms, con't.

TERM	*DEFINITION*
Health advisory level (HAL)	An advisory number published by U.S. EPA's Office of Drinking Water and Office of Water Regulations and Standards. Short-term (ten days or less), long-term (seven years or less), and lifetime exposure health advisories for non-carcinogens and suspected human carcinogens are included where data sufficient for derivation of the advisories exist. A HAL is a guideline, which includes a margin of safety to protect human health. For lifetime HALs, water that contains a pesticide at a concentration at or below its HAL is acceptable for drinking every day over the course of one's lifetime.
Leaching	A pathway by which agricultural chemicals may reach ground water; the process by which residues are dissolved in soil water and follow the movement of water through the soil matrix as it recharges a ground water aquifer.
Legal agricultural use	The application of a pesticide, according to its labeled directions and in accordance with federal and state laws and regulations, for agricultural use as defined in FAC section 11408. See also "agricultural use."
Maximum contaminant levels (MCLs)	MCLs are part of the drinking water quality standards adopted by CDPH and by U.S. EPA under the Safe Drinking Water Act. MCLs are formally established in regulation and are enforceable by CDPH on water suppliers.
Mitigation measure	An activity to substantially reduce any adverse impact of a given condition.
Model	Mathematical equations that represent certain processes. These equations can be implemented in a computer program in order to facilitate calculations and test model predictions against measured data.
Monitoring well	A well used principally for any of the follow purposes: (1) observing ground water levels and flow conditions, (2) obtaining samples for determining ground water quality, or (3) evaluating hydraulic properties of water-bearing strata.
Noncrop areas	These areas include rights-of-way, golf courses, cemeteries, and industrial and institutional sites. Agricultural use of pesticides in noncrop areas include weed control around buildings on a farm or on rights-of-way, irrigation canals and ditches, golf courses, parks, and cemeteries.
Nonpoint source	Contamination that cannot be traced to a small definable location (compare with "point source"), e.g., applications of agricultural chemicals to crops.

Glossary of Terms, con't.

TERM	*DEFINITION*
Organic matter	Plant and animal debris or remains found in the soil in all stages of decay. The major elements in organic matter are oxygen, hydrogen, and carbon.
Parts per billion (ppb)	A way to express the concentration of a chemical in a liquid, solid, or in air. Since one liter of water weighs one billion micrograms, one microgram of a chemical in one liter of water is equal to one ppb.
Pesticide Contamination Prevention Act (PCPA, AB 2021)	A law, effective January 1, 1986, which added agricultural use sections 13141 through 13152 to Division 7 of the FAC. The PCPA requires the following: (1) each registrant of an agricultural use pesticide to submit environmental fate data to DPR; (2) the director to use those data to establish a list of pesticides with the potential to pollute ground water (GWPL); (3) the director to monitor ground water for these pesticides; (4) all local, county, and state agencies to report to DPR the results of pesticides sampled in ground water; (5) the director to maintain a specified well sampling database and to post certain information annually on its website about pesticides in ground water, and (6) a specified subcommittee and the director to conduct a formal review to determine if continued use of a pesticide can be allowed if it is detected and verified in ground water due to legal agricultural use.
Pesticide Management Zone (PMZ)	A geographic surveying unit of approximately one square mile, which is vulnerable to ground water contamination based on detections of pesticides or pesticide degradates in ground water due to agricultural use. PMZs were formally listed in section 3CCR section 6802 and were pesticide specific. The use of a pesticide inside its PMZs was subject to certain ground water protection restrictions and requirements. PMZs were renamed GWPAs in May 2004.
Point source	A source of contamination, such as a spill or at a waste site that is initially deposited and concentrated in a small, well-defined area. The contamination can be traced to its point of origin by locating a specifically shaped pattern of residues in the ground water called a plume.
Range	When used in the context of mapping locations, a range is a single series or row of townships, each six miles square, extending parallel to, and numbered east and west from, a survey base meridian line.
Registered pesticide	A pesticide product approved by the U.S. EPA and DPR for use in California.

Glossary of Terms, con't.

TERM	*DEFINITION*
Regulations	These are adopted by state agencies to implement or clarify statutes enacted by the California Legislature. They can also be adopted in response to federal legislation, court decisions, changing technologies, and concerns for the health and well being of the residents of California.
Section	When used in the context of mapping locations, a section is a land unit of 640 acres or one square mile, equal to l/36 of a township.
Specific numerical values (SNV)	Certain numeric threshold values that the PCPA requires to be established for the following physical and chemical properties of pesticide active ingredients: water solubility, soil adsorption coefficient, hydrolysis, aerobic, and anaerobic soil metabolism, and field dissipation (the field dissipation SNV has not been established). The PCPA associates these properties with the longevity and mobility of a chemical in the soil and requires the establishment of SNVs in regulation as a means of predicting which pesticides are likely to pollute ground water.
State Well Number	A unique number assigned to a well consisting of the county number/township/range/section/tract and sequence number.
Township	When used in the context of mapping locations, a township is a public land surveying unit that is a square parcel of land, six miles on each side. The location of a township is established as being so many six-mile units east or west of a north-south line running through an initial point (called the "principal meridian") and so many six-mile units north or south of an east-west line running through another point (called the "baseline").
Triazine	A chemical compound derived from any of three isomeric compounds, each having three carbon and three nitrogen atoms in a six-member ring. Triazine herbicides are strong inhibitors of photosynthesis. Atrazine and simazine are examples of commonly used triazine herbicides.
Well inventory database	A statewide database, required by the PCPA and maintained by DPR, of wells sampled for pesticides and pesticide degradation products.